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## THE NUTRITION AND HEALTH OF THE JAMES BAY INDIAN\*

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IN a previous study<sup>1</sup> of the Canadian Bush Indian evidences of marked malnutrition were found and it was concluded that:

"Many characteristics, such as shiftlessness, indolence, improvidence and inertia, so long regarded as inherent or hereditary traits in the Indian race, may at the root be really the manifestation of malnutrition. Furthermore, it is probable that the Indian's great susceptibility to many diseases, paramount amongst which is tuberculosis, may be attributable amongst other causes to the high degree of malnutrition arising from lack of proper foods."

This is of concern not only to the Indian but to the white population, as any attempt to

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eradicate tuberculosis in Canada must include the institution of preventive measures for everyone. In addition, from the economic standpoint a group of people in poor health tends to be a liability rather than an asset to the nation.

The present investigation of the Canadian Bush Indian was planned to include not only a medical examination, particularly from the standpoint of their health and development, nutritional state, and prevalence of tubercular infection, but also a dental examination and a study of their housing and sanitation, or lack of it. In addition, possible methods for augmenting or improving the food supplies of the Bush Indians were to be thoroughly investigated. This would include the study of practical means for increasing their supplies of wild foods, of the chances of really interesting the Indians in raising gardens, and of the possibility of improving the nutritional value of the food purchased at the posts. A study of how to improve the economic condition of the Indians through fur conservation and possibly through the development of village industries and handicrafts was also included in the plan of the study. However, it was felt that if recommendations were to be made as a result of this investigation, it was also essential to have sociological and anthropological information. For instance, it would be useless to recommend a limited agricultural program, even if suitable soil and climatic conditions were present, if the Indian's only ambition was to be a hunter and he could not be led to take any lasting interest in gardening. In other words, it would seem essential to obtain more information on how the Indian thinks and on how he could best be helped to improve his living conditions.

The study was planned by the "National Committee on Community Health Surveys" under the chairmanship of Dr. Percy Vivian. The following personnel are taking part in the overall study: 6 physicians, a dentist, an x-ray technician, a photographer and 3 anthropologists. The present report is limited to the medical and dental aspects of the study which were carried out in August 1947.

## AREA SELECTED FOR STUDY

The James Bay region was chosen as the area for study on account of its accessibility (Fig. 1). The Indians of the James Bay area are typical of the Canadian Bush Indians. With the exception of the Moose Factory Band, they are as isolated from outside influences as the more remote bands. The Indians congregate in various bands and spend 7 to 9 months each year looking after their traplines in the interior. Then in the spring or early summer they come down to the trading posts of the Hudson's Bay Company situated on James Bay to trade their furs for food, clothing and other

known as James Bay, and realized they were not on the Pacific but on an inland sea. They wintered in James Bay and in the spring started to return to England. Unfortunately for Hudson, his crew mutinied and cast him adrift in a small boat with 7 loyal members of his crew. The *Discovery* with the remaining members of the crew returned to England.

In 1668 two French explorers, Groseilliers and Radisson, interested the English in the possibility of fur trading in Hudson Bay. Two boats set out from England, one ship became disabled but the other, called the *Nonsuch* proceeded through Hudson Straits and south on Hudson Bay. The party wintered at a place they named Charles Fort, which is now Rupert's House, at the mouth of Rupert's River. Two years later, on May 2, 1670, England's Company of Adventurers, now known as Hudson's Bay Company, were given a charter that made them owners of a large portion of the New World.

Two bands were chosen for intensive study, the Attawapiskat Band at the western and the Rupert's House Band at the southeastern sections of James Bay. In July, 1947, Professor Gordon Brown, Associate Professor of Anthropology, University of Toronto, who is in charge of the sociological and anthropological aspects of the study, along with two anthropologists, Dr. J. J. Honigmann and Mr. A. J. Kerr, inspected the Moose Factory, Albany, Attawapiskat, Fort George and Rupert's House bands. The Attawapiskat Band and the Rupert's House Band were chosen for study as the economic status of the former band was very poor while that of the latter was good. This better financial state of the Rupert's House Indian is due to the successful beaver conservation scheme initiated by the Hudson's Bay Company. Arrangements were made for Dr. Honigmann to live with the Attawapiskat Band and Mr. Kerr with the Rupert's House Band for a period of approximately one year.

The party was transported by rail to Moosonee, at the south end of James Bay, and then by water (Fig. 2) and air (Fig. 3) to the Attawapiskat Band and to the Rupert's House Band. Due to adverse weather conditions, it was necessary to turn into the Albany River on the west coast, and the Moose River on the south coast, which afforded an opportunity to examine members of the Albany and Moose Factory Bands in addition to the Attawapiskat and Rupert's House Bands as originally planned.

## HOUSING AND SANITATION

The James Bay Indians live under most primitive and deplorable conditions. Their homes are either patched-up tents (Fig. 4) or one-roomed log shacks. Filth, refuse and excreta surround them. There is usually a

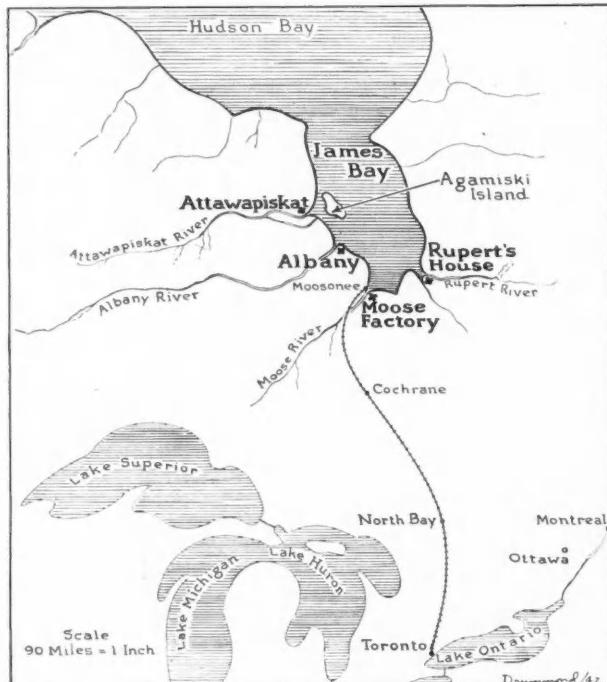


Fig. 1.—Great Lakes and James Bay regions showing Toronto, Moosonee, Albany, Attawapiskat and Rupert's House.

articles of interest to them. The supplies for the area, which were formerly brought in by boat through Hudson Straits, are now distributed by small boats from Moosonee, which is the terminus of the Ontario Northland Railway, 500 miles directly north of Toronto. The number of James Bay Indians is approximately 4,000.

James Bay is the southern extension of Hudson Bay, which is the second largest sea on earth, being 1,300 miles long and 600 miles wide. It is exceeded in size only by the Mediterranean Sea. Hudson Bay was discovered in 1610 by Henry Hudson, who set out from England in the barque *Discovery* with a crew of 20 men. After proceeding through the Hudson Straits, he entered Hudson Bay believing he had discovered the Northwest Passage to the Pacific Ocean. It was late autumn when they reached the southern extremity, now

covered box where some of their food supplies are stored. Often there is no furniture whatsoever, not even a table or chair. The habitations are usually without floors, the ground being covered by spruce boughs on which they sleep. The tent or hut is frequently occupied by more than one family.

Cooking utensils are frequently limited to a frying pan, an iron pot and a lard pail used for a teapot (Fig. 5). Drinking water is dipped from the nearest stream. These Indians seldom go in swimming. Although head lice were found frequently, their skin and clothing appeared reasonably clean.

Fortunately the nomadic life of following the traplines cause frequent shifts of camp site, except during that portion of the year spent at the posts. Here sanitary conditions are at their worst, and this is where most outbreaks of disease occur.

#### FOOD SUPPLY

The food supply of the Attawapiskat and the Rupert's House Indians was investigated. These two bands of Indians obtained food from two principal sources, namely, (1) from the stores and missions, and (2) from hunting and fishing.

*Foods obtained from stores and missions.*—The Attawapiskat band was able to buy food from the Hudson's Bay store at their home site and a smaller outpost store at Lake River, from a store run by an independent trader at Attawapiskat, and also from the Roman Catholic mission at the same locality. The traders and the priest in charge of the mission very kindly gave us a complete list of all the food supplied to this band of Indians. In addition, an estimate

was made of the relatively small number of potatoes grown by this band.

The Rupert's House band obtained food from the Hudson's Bay store, from Mrs. Watt, the widow of a former Hudson's Bay Post manager there, who runs a small bakery, from the Roman Catholic mission, and from a garden planted by the Indians. The amounts of food

TABLE I.  
FOODS PURCHASED AT ATTAWAPISKAT  
Nov. 1, 1946 – Oct. 31, 1947  
AMOUNTS PER PERSON PER DAY

	Weight oz.	Calories
Flour.....	8.24	820
Sugar and jams.....	3.32	370
Fats and butter.....	1.30	328
Milk and cheese.....	8.54*	166
Oatmeal and cereal products.....	1.01	114
Vegetables.....	1.72	52
Citrus fruits and tomatoes.....	0.45	3
Other fruits.....	0.45	33
Canned meats.....	0.41	29
Other foods.....	0.01	—
Total.....		1,915

\* About 0.04% cheese.

TABLE II.  
FOODS PURCHASED AT RUPERT'S HOUSE  
MAY 1, 1946 – APRIL 30, 1947  
AMOUNTS PER PERSON PER DAY

	Weight oz.	Calories
Flour.....	8.93	884
Fats and butter.....	2.62	638
Sugar and jams.....	2.96	318
Oatmeal and cereal products.....	1.86	219
Milk and cheese.....	6.22*	138
Canned meat.....	1.10	76
Citrus fruits and tomatoes.....	0.78	7
Other fruits.....	0.91	61
Vegetables.....	1.45	45
Other foods.....	0.12	1
Total.....		2,387

\* About 0.007% cheese.

TABLE III.  
TOTAL NUTRIENTS FROM ALL SOURCES. AMOUNTS PER PERSON PER DAY.

Nutrient	Attawapiskat band	Rupert's House band	Weighted recommended allowance (Food and Nutrition Board, N.R.C., 1945)
Calories.....	2,546	3,103	2,790*
Protein, gm.....	114	110	64
Calcium, mgm.....	425	363	970
Iron, mgm.....	17	17	11
Vitamin A, I.U.....	7,184	2,280	4,300
Thiamine, mgm.....	1.3	1.5	1.3
Riboflavin, mgm.....	1.5	1.7	1.85
Niacin, mgm.....	16.0	17.0	13.0
Ascorbic acid, mgm.....	12.0	14.0	68.0

\*Men allowed 4,500 calories daily for 9 months and 3,000 daily for 3 months; women 3,000 daily for 9 months and 2,500 daily for 3 months.

The Recommended Allowances vary with the sex and age of the individual. These amounts would provide the Recommended Allowances for the men, women and children of the two bands.

obtained from all these sources were listed for us by those in charge of these organizations.

*Foods obtained from hunting and fishing.*—The store managers gave us a list of all the furs purchased. An estimate of the amount of other game obtained by the Indians was made by the anthropologists. We also obtained information as to the approximate weight of the edible portion of each animal. Specimens of the game commonly eaten were obtained and assays made of many of the nutrients.<sup>2</sup> For the fish, item 95-a in "Tables of Food Composition in terms of Eleven Nutrients"<sup>3</sup> was used.

It is believed that the records of the foods obtained from the stores and mission, which included that given out as Family Allowances and Relief, were quite accurate. No other sources of store food were available. It should be noted that the amounts of food obtained from hunting and fishing were based on estimates, which however were made with great care. In making these estimates the weights of the edible portion of many of the animals, birds and fish were obtained. However, the food was obviously not evenly distributed among all the members of the bands or throughout the different seasons of the year. Allowance was made for the rolled oats and lard given to the dogs. A very small amount of berries was obtained which was not included in the calculations. Similarly, the fish liver oil and vitaminized biscuits supplied by the Indian Health Services and the Indian Affairs Branch and given to the children when possible, that is, when they were attending school in the summer months, were not included.

The amounts of the foods purchased and the total nutrients available from all sources are set out in Tables I, II and III.

#### NUMBER EXAMINED AND PROCEDURES FOLLOWED

In Table IV is set out the number examined from each band. It is worthy of note that at Attawapiskat, out of a total of 467 with headquarters at the post, no less than 278, or 60%, were examined, and, similarly, at Rupert's House, out of a total of 375, 214, or 57% of the band, were examined. The total number of Indians examined was 728.

The procedure followed was to obtain, usually with the aid of an interpreter, the name and age of each subject. He, or she, was then given a number for identification. The height and weight were taken, with the shoes and out-

side clothes off. In addition, the transverse width of the chest, the width of the iliac crests, and the circumference of the right calf were taken. The next step was to have a full chest plate x-ray taken by means of portable x-ray

TABLE IV.  
NUMBER EXAMINED AT EACH BAND

Band	Male	Female	Total
Attawapiskat.....	134	144	278
Rupert's House.....	119	95	214
Albany.....	81	72	153
Moose Factory.....	30	53	83
Total number examined.....	364	364	728

equipment. This was done by Mr. Gordon Stockley, x-ray technician, who, together with the equipment, was kindly loaned by the Tuberculosis Prevention Division of the Department of Health of the Province of Ontario. For this purpose the subjects were stripped to the waist, the women putting on paper capes. In all, 492 x-ray plates were made. No x-rays were taken at Albany or Moose Factory. After completion of the x-ray, the patient was then examined medically. An appraisal was made of his general condition and alertness, both mental and physical, and he was examined for the presence of old or active tuberculosis of the cervical glands, enlarged thyroid, bony deformities, possibly due to old rickets, and changes in the hair, skin, eyes, lips and tongue which may result from malnutrition. The heart was examined and, at Attawapiskat, the blood pressure and pulse rate were taken. Clinical examination of the lungs was not carried out. The presence of vaccination scars was noted. Following the medical examination, the majority had a dental examination, which included a survey of both the hard and soft tissues. In a few instances, dental x-rays and bacterial smears from the gingival tissues were taken.

Due to the fact that records of the food consumed by the different bands for a period immediately preceding the investigation could only be obtained from the Attawapiskat and Rupert's House bands, the observations reported here are largely limited to these two bands.

#### GENERAL CLINICAL FINDINGS

*Age and sex.*—The age and sex of the subjects examined at the four bands are set out in Table V.

TABLE V.  
AGE AND SEX OF INDIANS EXAMINED.

Band	Sex	Years of age										Total
		0 to 4	5 to 9	10 to 14	15 to 19	20 to 29	30 to 39	40 to 49	50 to 59	60 to 69	70 and over	
Attawapiskat:	Male	13	14	17	12	24	16	17	8	8	5	134
	Female	17	20	13	10	27	19	15	7	10	6	144
Rupert's House:	Male	10	17	12	14	26	12	10	9	5	4	119
	Female	9	10	14	10	16	10	11	7	5	3	95
Albany:	Male	10	15	7	7	16	11	3	4	6	2	81
	Female	7	7	9	12	13	9	6	5	1	3	72
Moose Factory:	Male	1	3	4	3	3	6	3	2	3	2	30
	Female	2	12	16	6	8	1	4	3	1	0	53

**General appearance.**—It was the impression of all observers that the Indians examined were short and not well muscled. This was borne out by the measurements taken, the details of which are shown in the later section on physical measurements. It was also the impression of all observers that they moved slowly and were apathetic. The children were much more docile than white children. On comparing the Attawapiskat and the Rupert's House bands, the latter band was the more active physically and displayed more initiative.

**Vaccination scars.**—Vaccination scars were found in 77% of all Indians examined, indicating the effectiveness of the efforts of the Indian Health Services to have every Indian vaccinated against smallpox. In recent years, diphtheria toxoid and pertussis vaccine have been given simultaneously with the vaccination and the administration of the toxoid and pertussis vaccine repeated.

**Enlarged thyroid.**—Marked enlargement of the thyroid was seen in only one subject, a woman of 70 years of age, at Rupert's House. A barely perceptible enlargement of the thyroid was found in 5.3% of all the subjects examined, the majority in young women. This indicates the need for the continued use of iodized salt. For the past three years all salt sold through the Hudson's Bay Posts has been iodized salt.

**Examination of heart, blood pressure and pulse rates.**—In only a negligible number of Indians was a heart murmur heard. An irregular pulse was also encountered very infrequently. The blood pressure was recorded on 81 males and 76 females of the Attawapiskat band 17 years of age and over. In the 36 males over 40 years of age, 7 had systolic blood pressure over 150, the majority being just over this mark. There were two exceptions, one aged 65 with a systolic blood pressure of 214, and the

other aged 73, with a pressure of 170. In the females 49 years of age and under, no one had systolic blood pressure over 150. Over 49 years of age, out of 21 examined 8 had systolic blood pressure over 150, the highest being 218 in a woman aged 58 years. The blood pressure findings are not markedly different from what one would expect to find in comparable age groups of white people.

The pulse rates of the 85 males and 88 females 17 years of age and over were taken. The rates are similar to those of a white population of comparable ages.

#### TUBERCULOSIS

The prevalence of tuberculosis of the cervical glands, as indicated by active discharging lesions (Fig. 6) or old scars, is recorded in Table VI.

TABLE VI.

PREVALENCE OF TUBERCULOSIS OF CERVICAL GLANDS AS INDICATED BY ACTIVE DISCHARGING LESIONS OR LARGE OLD SCARS

Band	Number examined	Healed scars	%	Active discharging lesions	%
Attawapiskat.....	278	9	3.2	3	1.1
Rupert's House.....	214	4	1.9	2	0.9
Albany.....	153	16	10.4	3	1.9
Moose Factory.....	83	4	4.8	0	0

The tuberculosis survey, which was limited to the Attawapiskat and Rupert's House bands, includes 492 men, women and children who were x-rayed for the presence of pulmonary tuberculosis. Examination of the x-ray plates disclosed suspect tubercular lesions in 18 patients, inactive lesions in 2 patients, and active pulmonary tuberculosis in 14 patients. Eighteen Indians had involvement of the cervical glands. In addition to these 492 patients there were 2 active cases of tuberculosis of the

spine and 3 active cases of pulmonary tuberculosis at Attawapiskat who were too ill to present themselves for examination. Also, the Indian Health Services' records showed that a further 10 patients from these bands with active pulmonary tuberculosis were in sanatoria. Thus for the purpose of the tuberculosis survey a total of 507 persons from these two bands were considered. A summary of the findings is set out in Tables VII and VIII.

TABLE VII.  
TUBERCULOSIS MORBIDITY

<i>Number considered</i>	<i>Attawapiskat band 291</i>	<i>Rupert's House band 216</i>
Active pulmonary tuberculosis in bed.....	3	0
Active pulmonary tuberculosis from x-ray	9	5
Active pulmonary tuberculosis in sanatoria.....	8	2
Total active pulmonary tuberculosis.....	20	7
Inactive pulmonary tuberculosis from x-ray	1	1
Suspect pulmonary tuberculosis from x-ray	8	10
Extra-pulmonary tuberculosis—active.....	5	2
Extra-pulmonary tuberculosis—healed.....	9	4

TABLE VIII.  
TUBERCULOSIS MORBIDITY

<i>Band</i>	<i>Incidence of active tuberculosis rates per 100 population</i>		
	<i>Pulmonary</i>	<i>Extra-pulmonary</i>	<i>Total</i>
Attawapiskat.....	6.9	1.7	8.6
Rupert's House....	3.2	0.9	4.2
Averages.....	5.3	1.4	6.7

6.9% of the persons considered at Attawapiskat (including 8 cases in sanatoria) have active pulmonary tuberculosis. In a reasonably comparable white population in Ontario, as shown by x-ray survey, the incidence is 0.15%.<sup>4</sup> The ratio is therefore 46:1. Even if the 8 cases who were not in the community when the survey was made are excluded, the ratio is still impressive, 26:1.

A significant finding in the survey is that the incidence of both pulmonary and extra-pulmonary tuberculosis at Attawapiskat is twice that at Rupert's House.

#### PHYSICAL MEASUREMENTS

The transverse width of the chest at rest was measured at the level of the nipples, using straight arm calipers without pressure. The distance between the widest flares of the iliac crests was measured with the same calipers but firm pressure was applied. The maximum circumference of the calf was measured with a flexible metal tape measure.

*Children from 2 to 5 years of age.*—The heights, weights and widths of these children were similar to those of American white children reported by other investigators<sup>5, 6, 7</sup> and can be considered satisfactory.

*Children from 6 to 9 years of age.*—The weights for heights of these children were similar to those of the Toronto school children surveyed in 1939.<sup>8</sup> When the width of the children was taken into consideration also (by the use of Pryor's tables,<sup>5</sup> which are compiled from measurements of white California children), their weights were still satisfactory with the exception of the Attawapiskat girls, 40% of whom were 6 to 14 pounds lighter than the expected weights.

*Children from 10 to 19 years of age.*—The weights of many of the children of these ages were not sufficient for their heights when compared with white children. This was most evident in those over 15 years of age. The records of the girls were poorer than of the boys. Two-thirds of the Attawapiskat girls, half of the Rupert's House girls, and one-third of the boys in both bands were 10 to 30 pounds underweight for their heights and widths.<sup>5</sup> When the heights and weights were plotted on Wetzel grids,<sup>9</sup> many low weights were again evident.

*Comparison with other Indian tribes.*—Very few measurements of Indian children have been reported.<sup>10, 11, 12</sup> The Cree children, whom we measured, were taller than the Pueblo and Maya children of the southern United States, but were similar in stature to Dakota Indian children, except for the Attawapiskat older boys who were taller. When the weights for heights of these Cree children were compared with those of the Dakota children, it was found that 50% of the boys between 10 to 15 years at Rupert's House and 60 to 66% of the boys and girls of the same age at Attawapiskat had lower weights. It is unfortunate that tables

based on the measurements of large groups of Indian children are not available.

It is well known that the food needs of adolescent children are high. The poor weight records of these Indian adolescents suggests that these needs were not being met. After the age of 12 or 13, the boys go off on hunting trips with their fathers and are thus able to supplement their meals with game. Their sisters are unable to do so as they remain in camp. This may be a partial explanation for the better growth in the boys. It is interesting to note that 4 of 5 cases of active tuberculosis found in this age group at Attawapiskat were girls.

*The common type of body build in these Indian children.*—In order to obtain some idea of the general body build, the height, weight, hip width and girth of the calf measurements were checked with the percentile graphs recently published by Stuart and Meredith.<sup>13</sup> The most striking finding was the extremely small calf circumference in these children. Their general body build was short and broad.

*Adults.*—When compared with measurements of American white adults<sup>5</sup> all the adults at Rupert's House and all the women at Attawapiskat were short in stature. The men at Attawapiskat were approximately normal in height. About half of all the younger women (from 20 to 39 years of age) were 10 pounds or more underweight for their heights and builds. This condition was somewhat more prevalent in the Attawapiskat band than in the Rupert's House band. Nearly 40% of the young men of this age group at Attawapiskat were similarly underweight. In the older age groups the percentages showing such a degree of underweight decreased. A considerable number of other women were grossly overweight, especially at Rupert's House. The greater prevalence of fairly severe degrees of underweight at Attawapiskat suggests that the total intake of food in that band was insufficient. Also the underweight is most prevalent during the main child-bearing years when the nutritional needs of women are at their height.

#### CLINICAL SIGNS WHICH MAY BE ASSOCIATED WITH MALNUTRITION

During the medical and dental examinations particular attention was paid to the presence of abnormal conditions involving the skin, lips,

eyes, tongue and gums, which are frequently associated with malnutrition.

*Skin—pigmentation.*—A brownish pigmentation of the elbows, extending down the extensor surface of the arm to about the middle of the forearm, was observed in a number of the Indians examined, particularly at Attawapiskat and Albany. Slight scaling of the skin over the elbows was also present in many instances. Similar pigmentation and scaling were noted on the skin of the knees. These changes, observed in approximately 10% of the adult females but rarely seen in males, are similar to mild skin changes sometimes seen in pellagrins. However, no other evidences of pellagra were present. It was concluded that the immediate factor in producing these changes was the pressure on the knees from kneeling in canoes and resting the arms on the side of the canoe when pulling in fish nets.

*Skin—folliculosis, hyperkeratosis and xerosis.*—Folliculosis can be felt more readily than it can be seen. It consists of papules due to epithelial metaplasia of the hair follicles associated with changes of the sebaceous glands. In the early stages, it resembles "goose flesh". However, on briskly rubbing the skin "goose flesh" disappears, while folliculosis remains. Lesions usually first appear on the lateral surface of the arm and the extensor surface of the thigh. As the condition develops, the papules which at first were simply rounded become rough and horny due to keratotic plugs projecting from hypertrophied hair follicles. This stage is referred to as hyperkeratosis. Xerosis is used to designate a dry, crinkled skin. Folliculosis, hyperkeratosis and xerosis in certain instances will respond to the administration of vitamin A.<sup>14</sup>

Of the 492 Indians examined at Attawapiskat and Rupert's House, 57 showed evidence of folliculosis (Fig. 7). The condition was seen more frequently at Attawapiskat (14%) than at Rupert's House (8%), and occurred two and a half times as frequently in the female as in the male. Although the condition was seen in all age groups, it was found more frequently during the adolescent period (10 to 19 years). Hyperkeratosis was seen in only 2 individuals, both young adult females, members of the Attawapiskat Band. Xerosis was observed in only 1 male, an adult over 40 years of age, at Rupert's House. However, this condition was encountered

in 20 females, the majority over 40 years of age (Fig. 8). Its prevalence was the same in both bands. Similar skin changes were noted at Albany and Moose Factory. All three conditions occurred with greater frequency in females than in males. The authors were impressed with the excellent condition of the skin of the majority of the subjects examined. When lesions were present, they were slight in degree. It is the custom of the Indians to wear heavy clothing at all seasons. This keeps their bodies well covered, with the exception of the face and hands, and consequently there is very little irritation due to exposure to weather.

*Skin — seborrhœa.* — Seborrhœic changes can occur at the nasolabial folds, the external canthi of the eyes and behind the ears as a result of a lack of riboflavin.<sup>15</sup> The condition is characterized by greasy, yellowish, flaky scales on a mildly erythematous base. No seborrhœic changes were encountered at Attawapiskat. In contrast, at Rupert's House these changes were seen in 7 subjects, 3 males and 4 females.

*Lips.* — Cheilosis is characterized by swelling, redness, scabbing and fissuring of the mucous membranes of the lips. It has been reported in individuals suffering from a lack of riboflavin.<sup>15</sup> There are many etiological factors which influence swelling, redness, scabbing and fissuring, such as exposure to weather, irritation from biting the lips and mouth breathing, as well as a lack of riboflavin. In the absence of other evidences of riboflavin deficiency, the authors believe that little reliance can be placed on lip lesions alone as an indication of riboflavin deficiency.

Redness, swelling and slight fissures were seen in the majority of Indians examined (Fig. 9). These signs were found with approximately equal frequency in both sexes and at all ages, with the exception of individuals over 40, who showed less swelling, redness and scabbing than was encountered in the younger age group. Also, these signs were seen more frequently at Rupert's House than at Attawapiskat.

Angular stomatitis is characterized by the development of fissures at the angles of the mouth, with an inflammatory reaction. It may be associated with a lack of riboflavin but, like cheilosis, there are other etiological factors. When this condition heals, scars remain. This sign was seen with approximately equal fre-

quency in both sexes but occurred with much greater frequency at Rupert's House than at Attawapiskat (Fig. 10). Less than 0.5% of those examined at Attawapiskat had active lesions and 3.5% showed scars, as compared to 10% with active lesions and 30% with scars at Rupert's House.

*Tongue.* — It is well known that a lack of niacin will produce the fiery red tongue of pellagra, with atrophy of the papillæ and the development of fissures. However, other factors may be involved in the production of these changes. The tongue changes were all relatively mild. In fact the authors were impressed with the excellent condition of the tongues. In only a few instances were the pathological changes of a marked degree. These signs were seen with approximately the same frequency in both sexes and in both bands.

*Eyes.* — The most striking abnormalities of the eyes which were encountered were pterygia and thickening of the conjunctiva. The relation of these changes to diet is a moot question. The thickening of the conjunctiva was clearly evident in certain children even as young as 5 years of age. It was seen with increasing frequency in each succeeding decade of life. Out of 150 Indians 20 to 39 years of age, 126 showed obvious thickening of the conjunctiva, the thickening being of a severe degree in over 50%. After 40 years of age, every one of 130 Indians examined showed obvious thickening of the conjunctiva, the thickening being of a severe degree in no less than 90%. Under 40 years of age, the condition was encountered somewhat more frequently at Attawapiskat than at Rupert's House.

Twenty-five subjects with pterygia were observed at Attawapiskat and 26 at Rupert's House. The pterygia were of a severe degree, that is, extending well out on the surface of the cornea in 10 individuals at Attawapiskat and 6 at Rupert's House (Fig. 11). The majority were over 40 years of age, although the condition was seen occasionally in individuals in the third and fourth decades of life. At Attawapiskat the condition was more severe and three times more prevalent in females than in males, which is contrary to other experience with Bush Indians.<sup>1</sup>

The colour photographs were taken by M. J. Sym, Winnipeg.

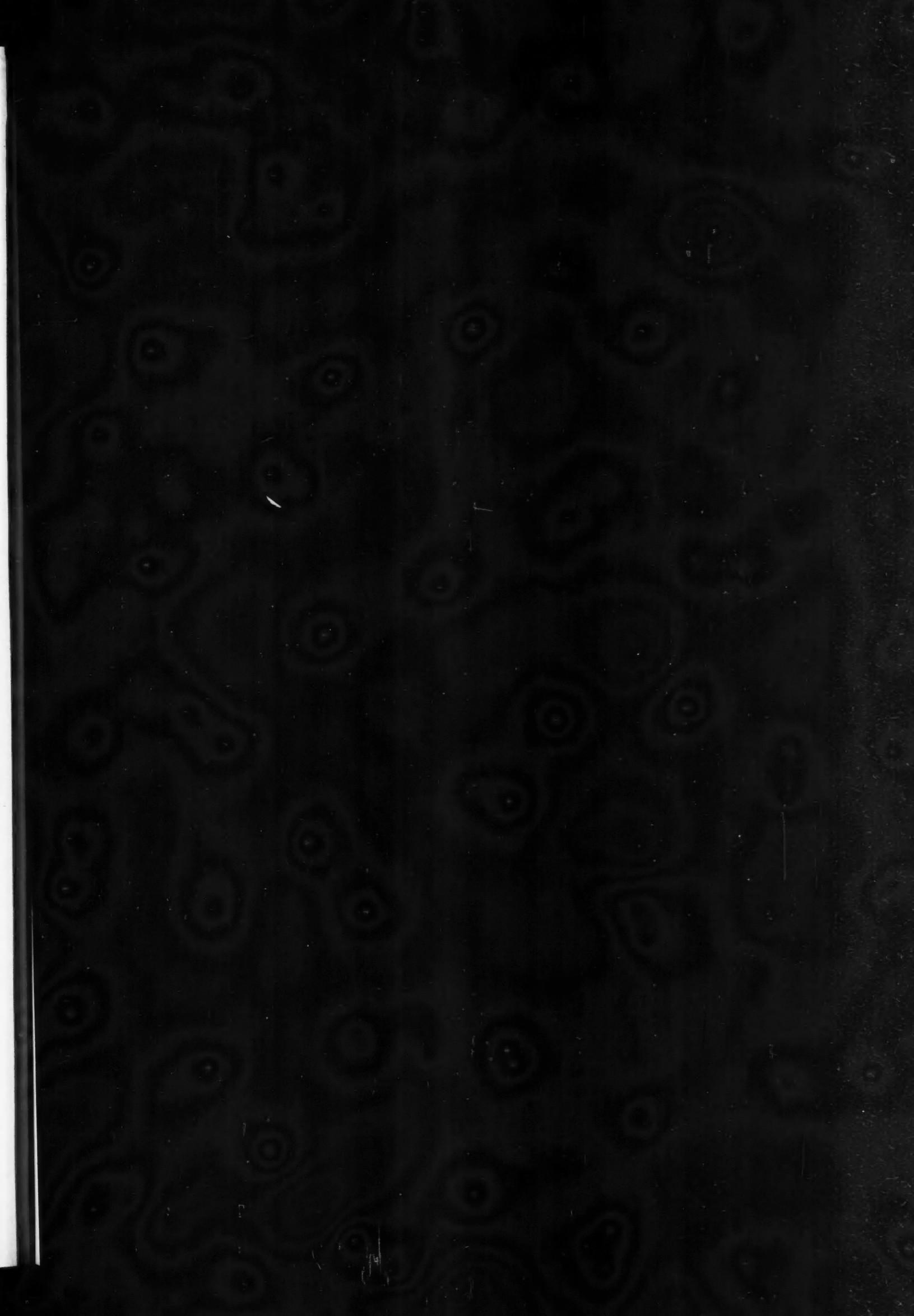






Fig. 2.—*Jano II* which transported the members of the expedition by water.



Fig. 3.—“Norseman”—plane which transported the members of the expedition by air.



Fig. 4.—Indian tent at Rupert's House with family standing outside.



Fig. 5.—Mother and 3 children cooking outside tent at Attawapiskat.



Fig. 6.—Discharging tubercular glands—female, aged 31.



Fig. 7.—Folliculosis of the skin of arm—female, aged 17. Note resemblance to “goose flesh”.



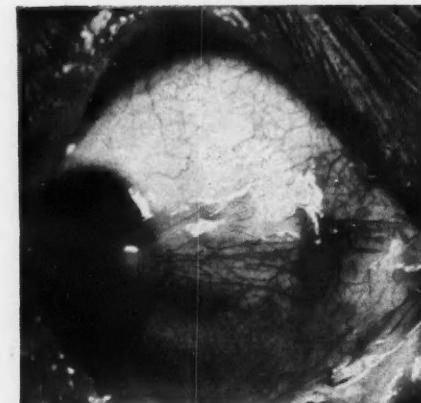
**Fig. 8.**—Xerosis of skin of leg—female, aged 59. Dryness with thinning and crinkling.



**Fig. 9.**—Cheilosis—female, aged 14. Note swelling, redness and vertical striae of lips.



**Fig. 10.**—Angular stomatitis—female, aged 50. Note reddened moist fissure at angle of mouth extending on to skin of face.



**Fig. 11.**—Thickening of conjunctiva and pterygium extending well across the cornea—male, aged 46.



**Fig. 12.**—Grade 3 gingivitis with redness, swelling and retraction of gingival tissue—male, aged 36.



**Fig. 13.**—Dental caries—male, aged 33.





## DENTAL EXAMINATION.

*Gingivitis.*—Many factors are involved in the production of gingival inflammation. Local factors, such as maloclusion or crowding of the teeth, can cause abnormal food impaction and retention. Soft sticky foods that require little mastication provide insufficient stimulation for the gum tissue and form irritating plaques on the teeth. Mouth breathing can cause an inflammatory reaction in the gingivæ. Two of the most frequent local causes are the formation of dental calculus or tartar, and inadequate oral hygiene.

1, 2 and 3. Changes recorded as grade 1 are slight redness and swelling of the gingival margins or tips of the papillæ, or both. In grade 2 the redness and swelling have increased until a distinct swollen band of gingival tissue can be seen around the necks of the teeth. This band is often a dark red colour, and is usually well demarcated from the normal tissue next to it. More severe degrees of involvement, with marked redness and swelling and extension of the inflammatory process over the alveolar process are designated as grade 3 (Fig. 12). At this stage the soft tissues usu-

TABLE IX.  
PREVALENCE OF GINGIVITIS AT ATTAWAPISKAT AND RUPERT'S HOUSE

Band	Grade of gingivitis	Age in years			
		2 to 12	13 to 25	26 to 45	46 and over
Number examined.....		48	40	53	38
Attawapiskat	None	77%	22%	7%	5%
	1	21%	58%	61%	66%
	2	2%	15%	24%	24%
	3	0%	5%	8%	5%
Number examined.....		34	47	23	26
Rupert's House	None	38%	9%	0%	0%
	1	56%	57%	30%	8%
	2	6%	28%	39%	42%
	3	0%	6%	31%	50%

From a systemic standpoint there is considerable evidence that a deficiency of ascorbic acid can be an etiological factor in the production of these changes. In certain countries, such as Newfoundland, where the average daily intake of ascorbic acid is low, gingivitis, with resultant early loss of the teeth, is almost universally seen,<sup>16</sup> whereas in other areas, such as the British West Indies, where the ascorbic acid intake is high although the diet is deficient in other nutrients, gingivitis is seldom encountered.<sup>17</sup> Also, when patients with a mild to moderate degree of gingivitis are treated locally to clear up the redness, swelling and tenderness of the gums, and then placed on a diet supplying only 8 to 10 milligrams of ascorbic acid per day, the gingivitis recurs much more frequently than when food is consumed supplying 75 milligrams of ascorbic acid daily.<sup>18</sup> Finally, it has been reported<sup>19</sup> that gingivitis responds to the administration of ascorbic acid over a period of many months.

The condition of the gums and teeth from the dental standpoint is being reported in full elsewhere.<sup>20</sup> For the purpose of this report, the gingivitis encountered has been graded as

ally have become detached from the teeth and there is obvious pocket formation between the gums and the teeth. The frequency with which these changes were encountered in different age groups at Attawapiskat and Rupert's House is recorded in Table IX. It is striking that the frequency and severity of inflammation of the gingiva are much greater at Rupert's House than at Attawapiskat. For example, above the age of 46 gingivitis of the severest grade was ten times as prevalent at Rupert's House as at Attawapiskat.

*Dental caries.*—The percentage of Indians examined at Attawapiskat and Rupert's House

TABLE X.  
PERCENTAGE OF INDIANS WITH NO MISSING,\* DECAYED  
OR FILLED TEETH AT ATTAWAPISKAT AND  
RUPERT'S HOUSE

Age in years	Sex	Attawapiskat band	Rupert's House band
2 to 12.....	Male	48%	0%
	Female	62%	20%
13 to 25.....	Male	50%	24%
	Female	50%	9%
26 to 45.....	Male	37%	14%
	Female	21%	0%
46 and over....	Male	43%	12%
	Female	18%	0%

\*An unerupted tooth was not considered as missing.

with no missing, decayed or filled teeth is recorded in Table X (Fig. 13). Again, as with gingivitis, dental caries was found to be much more prevalent at Rupert's House than at Attawapiskat. The low incidence of caries at Attawapiskat is striking. As still further evidence of the caries experience, the presence of alveolar abscesses, as shown by swelling of the mucosa over the alveolar process, with fistula formation and suppuration, was noted and the results recorded in Table XI. It was found with much greater frequency at Rupert's House than at Attawapiskat.

TABLE XI.  
PREVALENCE OF ALVEOLAR ABSCESS

Age in years	Attawapiskat	Rupert's House
2 to 12.....	1.5%	40.0%
13 to 25.....	3.0%	23.0%
26 to 45.....	14.5%	61.0%
46 and over.....	36.5%	62.0%

#### DISCUSSION

The extremely high incidence of both pulmonary and extra-pulmonary tuberculosis constitutes the most serious medical problem. It reflects lack of sanitation and cleanliness, close contact with persons with open tubercular lesions and inadequate therapy. Also, poor nutrition probably is an important contributing factor.

In regard to the food supply, the figures for the preceding year show that the total available calories for the members of the Rupert's House band were probably adequate, while for the members of the Attawapiskat band the total calories were probably inadequate for good health. In regard to the individual nutrients, the calculated available amounts for both bands in comparison to the United States National Research Council Recommended Allowances (1945) appear adequate, with the exception of ascorbic acid and calcium. However, the average nutrient figures tend to be misleading because of marked seasonal variations in the food supply. The almost complete absence of any method of food preservation restricts the use of game and perishable food during certain seasons. The difficulty in transportation in the winter limits the food intake largely to game and what supplies the Indian can carry to his traplines. These factors undoubtedly result in large month-to-month variation in the nutritive value of the food

supply. Isolation of the different families militates against any equal distribution of the game secured. Furthermore, the influence of environmental factors, such as the rigorous climate, the high physical exertion necessary in everyday life, excessive light reflected from the snow, and the prevalence of tuberculosis, all of which may increase the nutritional needs above normal, must be taken into consideration.

The current nutritional state of an individual may be affected by the food supply of preceding years. Before the institution of family allowances and relief, and in the case of the Rupert's House band, the establishment of the beaver conservation scheme by the Hudson's Bay Company, records of actual starvation were encountered in both bands. We are informed by reliable observers that many of the members of the Attawapiskat band chronically suffered from lack of food until about 5 years ago, while it is only during the last 10 years that the Rupert's House band have enjoyed a relatively good caloric intake.

The clinical findings clearly show the inadequate state of nutrition. This is especially reflected in the anthropometric measurements on the 10 to 19 year age group where nutritional needs are very high. Of the children in this age group, two-thirds of the Attawapiskat girls, one-half of the Rupert's House girls, and one-third of the boys in both bands were 10 to 30 lb. underweight for their heights and builds. The prevalence of this degree of underweight suggests important nutritional failure. Children under 9 years of age showed satisfactory growth except the Attawapiskat girls from 6 to 9. Of these, 40% were 6 to 14 pounds lighter in body weight than the weights given in Pryor's tables. Also a considerable degree of underweight (10 lb. or more) was seen in 50% of the young women from 20 to 39 years of age. The examiners were impressed by the general apathy, slowness and inertia of the group as a whole, as well as by the evidence of premature ageing.

Although no severe acute vitamin deficiency diseases were seen, many signs, such as may be found in early mild or moderate deficiencies, were observed. In most instances it is not possible to correlate these signs with the immediately preceding food supply. Thus the lip changes of cheilosis were seen in over half of those examined at Attawapiskat and in about 70% of those seen at Rupert's House. This

lesion, like many other vitamin deficiency lesions, may be due to a variety of causes and cannot be regarded as a sure sign of riboflavin deficiency without supporting evidence. The fact that fissures at the angles of the mouth were rare at Attawapiskat but seen in about 10% of those examined at Rupert's House points more strongly to the presence of riboflavin deficiency in the Rupert's House band. This, however, is not supported by the food survey.

Changes in the tongue were too slight to be of any significance and no clear-cut evidence of niacin deficiency was found.

Thickening of the conjunctivæ and pterygia were very prevalent and severe. The former appeared at an early age, being obvious in some children 5 years old and present in everyone over 40 years of age. Under 40 it was more prevalent in the Attawapiskat band than at Rupert's House. Folliculosis of the skin was also more common in the Attawapiskat band than at Rupert's House. Both these changes have been attributed by some observers to a lack of vitamin A. It is noted that the recent food supply is higher in vitamin A at Attawapiskat (due to the large number of water fowl eaten) than at Rupert's House.

A severe grade of gingivitis in persons over 26 years of age was found in 30 to 50% of those examined at Rupert's House but in less than 8% of those at Attawapiskat. As already mentioned, a low vitamin C intake may be a factor in the production of this lesion. However, the available vitamin C in the preceding year's food supply was practically the same for both bands.

There was a very striking difference in dental caries in the two bands. At all ages, the teeth at Rupert's House showed a much greater prevalence of dental caries than at Attawapiskat. The latter band, although poorer nutritionally, was more remote from civilization and had remarkably good teeth. Thus, between the ages of 13 and 25 years, 50% still had no missing, decayed or filled teeth, as compared with 24% of the males and 9% of the females at Rupert's House. While the total sugar intake for the preceding year was slightly higher at Attawapiskat (3.3 ounces per person per day compared to 2.9 ounces at Rupert's House), the use of hard candy at Rupert's House was nearly three times as great as at Attawapiskat (0.34 ounce per person per day compared to 0.12 ounce at Attawapiskat). Other reports have indicated

that partial starvation retards tooth decay.<sup>21</sup> Both bands used surface water for drinking and analyses showed it low in fluorine at both areas, 0.1 part per million.

Small goitres were found in 5.3% of the Indians examined, mostly in young women, indicating the need for continued use of iodized salt in this area.

#### RECOMMENDATIONS

1. *Improved medical and dental services.*—The miserable housing, sanitary and general health conditions under which these people exist make the provision of more adequate local health and medical services the most imperative need. Such local services should provide not only better nursing, dental and medical care but also regional hospital facilities. This could well be accomplished by the construction of a central regional hospital with nursing stations at out-lying posts. Because of the serious tuberculosis problem, a B.C.G. program should be instituted and a travelling clinic visit each band at intervals for the purpose of making chest x-rays of all members of the band, with prompt removal of active cases for treatment. If necessary, the families of patients sent away for treatment should receive assistance. This assistance should be extended to the patient on his return to the band.

Similarly, a dental service, primarily for the removal of oral infection and the replacement of teeth when this is essential to the health of the patient, should be provided by having a travelling dental clinic which would be stationed at the regional hospital and would visit the out-lying bands at regular intervals.

2. *Improved food supply.*—Every effort should be made to increase the use of locally available foods. An abundance of game birds, fish and fur-bearing animals would be one of the best methods of improving the food supply. Although the soil is poor, the climate unfavourable and the Indians not inclined to agriculture, potatoes and other root vegetables can be successfully produced in this area. An increased consumption of locally produced vegetables would make a desirable improvement in the diet. Preservation of seasonally available food by smoking, drying, salting and canning, as well as by the use of root cellars, are all practicable procedures if carried out as part of a planned program. Also, in certain key areas, game and

other food which is now lost through spoilage could be saved if quick-freeze facilities were available to the communities.\*

It would be desirable to improve the vitamin and mineral value of the staple foods which the Indian must purchase. It is entirely feasible to do this by incorporating thiamine, riboflavin, niacin, vitamin D, calcium and iron in the flour. Studies should be carried out to determine the practicability of incorporating vitamin A in the lard and vitamin C in the powdered milk.

The distribution of cod liver oil and vitaminized biscuits by the Indian Administration should be continued.

**3. Health and nutrition education.**—Comparison of the physical condition of the two bands studied shows that raising the economic level will accomplish little without accompanying health and nutrition programs. A resident nurse could undertake the educational work of such a program. The Indian must be taught in a simple and practical way the elementary rules of sanitation and health, and the need for better preservation, preparation and choice of food.

#### REFERENCES

1. MOORE, P. E., KRUSE, H. D., TISDALE, F. F. AND CORRIGAN, R. S. C.: *Canad. M. A. J.*, 54: 223, 1946.
2. JOHNSTONE, W. M., POCOCK, R. AND WILMS, M.: Nutritional Values of certain Game consumed by Northern Canadian Aborigines. (In Press.)
3. Tables of Food Composition in terms of Eleven Nutrients, U.S. Dept. of Agriculture Publication No. 572.
4. BRINK, C.: (Director, Division of Tuberculosis Control, Province of Ontario). Personal communication.
5. PRYOR, H. B.: *As the Child Grows*, Silver-Burdett, New York, 1943.
6. MEREDITH, H. V.: Univ. Iowa Study in Child Welfare, N.S. No. 292, 1935.
7. BOYNTON, B.: Univ. Iowa Study in Child Welfare, N.S. No. 325, 1936.
8. Height, Weight Survey of Toronto Elementary School Children, Department of Trade and Commerce, Dominion Bureau of Statistics, Ottawa, Can., 1939.
9. WETZEL, N. C.: *J. Am. M. Ass.*, 116: 1187, 1941.
10. STEGGARDA, M.: Maya Indians of Yucatan, Carnegie Inst. of Washington, Publication No. 531, 1941.
11. PITNEY, E. H.: Physical Size and Growth of Pueblo Indian Children, Dissertation for Ph.D., Yale, 1940.
12. WISSLER, C.: *Ann. N.Y. Acad. Science*, 20: 355, 1910-11.
13. STUART, H. C. AND MEREDITH, H. V.: *Am. J. Pub. Health*, 36: 1365, 1946.
14. PLATT, B. S.: *Brit. Med. Bulletin*, 3: 179, 1945.
15. SEBRELL, W. H. AND BUTLER, R. E.: *Pub. Health Rep.*, 54: 2121, 1939.
16. ADAMSON, J. D., JOLLIFFE, N., KRUSE, H. D., LOWRY, O. H., MOORE, P. E., PLATT, B. S., SEBRELL, W. H., TICE, J. W., TISDALE, F. F., WILDER, R. M. AND ZAMECNIK, P. C.: *Canad. M. A. J.*, 52: 227, 1945.
17. PLATT, B. S.: Nutrition in the British West Indies, His Majesty's Stationery Office, London, 1946.
18. LINGHORNE, W. J., MCINTOSH, W. G., TICE, J. W., TISDALE, F. F., MCCREARY, J. F., DRAKE, T. G. H., GREAVES, A. V. AND JOHNSTONE, W. M.: *Canad. M. A. J.*, 54: 106, 1946.
19. KRUSE, H. D.: *Milbank Memorial Fund Quart.*, 20: 290, 1942.
20. MCINTOSH, W. G.: Dental Studies and Nutritional Findings in the James Bay Indian. In Press.
21. MASSLER, M. AND SCHOUR, I.: *J. Pediat.*, 31: 431, 1947.

\* On the recommendation of the authors, the Hudson's Bay Company are installing such a unit at Rupert's House for the use of the Indians in that area.

#### OLD AGE FROM THE PSYCHIATRIC VIEWPOINT\*

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REPETITION cannot be made too often or too urgently that the aged are with us in greater numbers than ever before, and that the problems issuing from this circumstance will become more intricate as the numbers increase, both actually and comparatively, over the next few decades. The Royal Commission on Population in England estimated that by 1989 the number of persons of pensionable age (men 65 and over, women 60 and over) will equal the number of children (age under 15). The Registrar-General's forecast places that parity as early as 1971.<sup>2</sup> In the United States the proportion of the total population 65 years of age or over has about doubled between 1860 and 1940.<sup>7</sup> The population trends in the Province of Ontario show similar tendencies<sup>4</sup> and it is unlikely that the overall Canadian figures will be very different despite the probability of significant local variations.

The broad statistical happenings in our kind of social structure allow three general observations. First, the economic productivity per unit of population is likely to fall away unless technical developments continue to make it possible for fewer able-bodied to produce more. Whatever increases in technical efficiency there may be, an obligation will still hold to use human capacity wherever it exists, and not to set aside any worth because an arbitrary age limit has been exceeded. The problem of the exploration of the capacities of the aged is immediately raised. Secondly, the falling away of the ratio of children to aged means that the traditional care of the infirm by the family of the next generation is likely to be increasingly hindered. The strain on the fewer children may well become intolerably increased and the problem of the care of the senile will continue to arise progressively as major social issue. In that issue the lumping together of all forms of senility into a single group irrespective of differences of degree and kind is a danger to be avoided. Thirdly, the speed of onset of the demographic change is likely to outstrip the

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rate at which knowledge of the ageing process, even with the most vigorous enquiry, is likely to accrue. Already the successful forms of chemotherapy may well have promoted a further imbalance between the preservation of life and knowledge of what such preservation means in terms of the stresses of longevity.<sup>3</sup>

The psychiatric position in this changing scene is particularly onerous. On the one hand the psychiatrist must concern himself with all the factors, both intrinsic in the person and extrinsic in the environment, which appear to contribute to the breakdowns in living with which he must deal. Both from the point of view of prevention and of treatment or management, his interest must range from the pathophysiological, through the psychopathological, to the social. At each stage he will come clearly up against the problem as to whether he is observing a morbid process with varying possibilities of modification or an inescapable consequence of a natural involution.

Pathophysiological studies of the ageing human organisms, while considerable, fall short of general practical application so far as the psychiatrist is concerned. Failing vision and increasing deafness are well known contributors to a poorer life adjustment and in conjunction with a failing cerebral integration play a considerable part in the confusional episodes of the old. The poor distribution of spectacles and hearing aids is a social aspect of the problem of sensory deprivation.<sup>2</sup> Recently Sheldon<sup>12</sup> has drawn attention to other distressing sensory defects: an upset of labyrinthine function is the presumed cause of attacks of vertigo, and with a failing kinesthetic function imposes grave difficulty of movement particularly in the dark. Even in the day the liability to falls due to vertigo, or tripping, or imbalance, bring about a terrifying apprehension in circumstances where stairs or traffic have to be negotiated.

There is much evidence of impoverishment of cerebral physiological activity in the aged. Oxygen utilization is diminished and the cellular activities are continuously impeded by the general breakdown of homeostatic capacities.<sup>14</sup> Stephenson, Penton and Korenchevsky<sup>15</sup> reported improvement in senile subjects treated with large oral doses of the vitamin B complex and vitamin C. The improvement was most marked in respect to delusions, nocturnal

insomnia, day sleeping and mental confusion. But the relationship of these and similar observations to particular instances of senility is obscure and controversial.

In like case are the pathological findings where a disparate association between the degree and kind of pathology on the one hand and clinical disturbance on the other, is common. Nonetheless the increasing differentiation of the pathological processes responsible for dementia in the senium and presenium offers the hope of a working classification based on a clinico-etiological foundation.<sup>11</sup> Such a classification may have immediate significance, as in the contrast indubitably made on the basis of post mortem pathological findings and penetrating clinical inquiry between a group of senile psychotics and a group of arteriosclerotic dementias admitted to a mental hospital.<sup>16</sup> The latter required admission despite a relatively good social integration and financial security, the former because of a lessened social integration and financial insecurity. The senile psychotics required an extrinsic factor to "trigger" an incapacity, the arteriosclerotics were the immediate victims of an impersonal structural disease.

Psychometric testing has been widely carried out on the aged and the reported results have been much criticized.<sup>6</sup> Nonetheless it seems clear that following a peak period in the early '20's, there is a differential decline at a positively accelerated rate of mental, perceptual and motor abilities with a general tendency of withdrawal from outward activity concomitant with the mental decline. Although this general result is in favour of the concept of an inescapable involution it may be that there are work capacities and retraining possibilities in the aged hitherto unsuspected. Recently Professor F. C. Bartlett has emphasized the need for research in methods of learning and training suited to those who are aging.<sup>2</sup>

The personality needs of the aged as with other human beings can be crudely designated as (a) the need of invigorating experience; (b) the need of material security; (c) the need for belonging to a group; and (d) the need for maintenance of self-esteem. In whatever ways these needs are reflected in behaviour patterns and personal attitudes they obviously have their roots in the structure of society and the associated cultural values. The physiological, patho-

logical and psychological impediments in functioning have meaning insofar as they affect the personal-social relationship.

The degree of upset in this relationship has been well surveyed for the aged in Britain by the Nuffield Foundation.<sup>2, 13</sup> The survey bears testimony both to the hardihood and the difficulties of the old. Over 95% of them lived in the community, a vast majority of them independently: but their independence was not necessarily so lonely as is usually supposed. Oftentimes their living alone was largely based on whether or not children lived near. There were great local differences and the unwise planning on the basis of general overall figures is clear. Nonetheless many old people maintained a hopeless struggle against adversity in order to cling to the last vestiges of independence: in Wolverhampton 7.7% of the old people were causing stresses rated as a crushing burden to the younger generation.<sup>12</sup>

On the other hand 6.3% of the older people were themselves carrying great strains in caring for others. These strains were of three main types: the bringing up of grandchildren, the care of defective children, and the nursing of a loved spouse.

Sex differences in social integration are hard to evaluate: that they exist among the aged is clear from such an instance as the extraordinary high suicide rate among the men. Occupational activity is a more obvious example. In York, out of the total of working-class old people in 1935, about 30% of the men and 15% of the women were in some form of work. In conditions of war-time employment, figures as high as 88% for men (Wolverhampton) and 14% for women (London) were obtained. The figures excluded unknown numbers engaged on voluntary work of various description and represent a considerable contribution of the aged to production when opportunity offers. Even more illuminating was the quality of the work carried out, and the constancy of effort even if at reduced speed, when the employer made suitable adjustments, and heavy industry was avoided. Again it appears that the opportunity was locally conditioned to a great degree.

Recreational activities too were much determined by local possibilities. Where these were available and particularly where they were adjusted to the requirements of the aged they were

greatly appreciated and in some instances avidly taken up despite the hindrances of infirmity.

Income levels revealed an obstinate existence within the framework of an independent indigence. In 1940, 275,000 old-age pensioners were receiving outdoor relief, under the Poor Law: in 1946 under a less objectionable scheme 1½ million were in receipt of supplementary pensions. The contrasting figures give insight into a precarious marginal subsistence. Added to outmoded, crude, housing and living conditions, the relative absence of adequate meals service, domestic help, and home nursing care, the total difficulty bears testimony to the endurance of the aged.

It is out of this social scene and parallel circumstances in other countries that the overt mental breakdowns present themselves to the order of about 2%. Not all these are in mental hospitals but are found also in public assistance institutions and the like.<sup>10</sup> Nonetheless the incidence rate of first attack admissions to mental hospitals is increasing particularly among old men both in Canada<sup>1</sup> and the United States.<sup>3</sup> The death rate in the mental hospitals is greater among the men so that there is a relative preponderance of aged women among the resident population. A continuous study of the statistics and the questions raised by them are an absolute necessity for any long term administrative planning in hospital accommodation.

Not all admissions of the aged to the mental hospital need be permanent. Goldschmidt<sup>8</sup> has shown that social rehabilitation can proceed within the mental hospital and by attention to the possibilities of social integration discharge can be effected. Of more importance is the implication in her social survey that an adequate active outpatient appraisal, with the effective mobilization of available facilities, would have prevented admission in a considerable proportion of cases. This is also the experience of Lawton.<sup>9</sup>

Thorough enquiries of this sort give substance to the idea of prevention by competent case work operating on a background of reasonable organization. Of all the methods to hand of dealing with the mental breakdowns of the aged, social readjustment is the most promising. Nonetheless a caveat is needed against too sentimental a generosity: a lavish

attention to old age should not be at the expense of adequate provision for the needs of a more vigorous section of society.

When all has been said of the physical, psychological and social causes of breakdown the clinical forms of illness still remain as an important issue. The artificial separation of a psychiatry of old age has tended to prejudice accurate clinical description and appraisal of symptom development. All the psychiatric syndromes have representation in the old age group but with modifications which may have great significance not only immediately but in reference to more general problems of psychological illness. The toxic deliria, the affective disturbances, the hypochondriacal developments and the like are great fields of clinical study with a case material in many ways ideal for research enquiry.

Perhaps the greatest practical contribution which would come from closer clinical observation, apart from a clearing-up of a confused nosology, is the grading of capacity to live within the sheltered existence of the mental hospital. Where capacity exists it should be fostered by an effort appropriate to its worth: where it is non-existent the expenditure of expert services might well be cut out and replaced by a properly humane but medically inexpert care. Unmodifiable senility with complete incapacity for mental life should not be a burden on the valuable time of a highly qualified staff of doctors and psychiatric ancillaries. The number of such cases at present in the mental hospitals, with prospect of increase, represents a grave impingement on other psychiatric efforts more positively worthwhile in terms of the overall health possibilities.

A short review of this sort must of necessity leave out many interesting and important aspects of an absorbing topic. The whole field of the aged is riddled with problems for the psychiatrist, which can only be answered following the probings of competent and well-planned research. The urgency of the social problem will command increased outlay of administrative resources: but the need for basic facts is pre-eminent both as a guide to the planners and as a correction of too prodigal or too obdurate public sentiment. To my mind the profitable lines of research enquiry would be:

1. A statistical survey of local population trends: by local is meant the community unit.
2. Social surveys in the community unit of resources to offset the deficits of the aged and, more importantly, to promote their capacities.
3. Psychological research into the retraining possibilities of the aged with particular reference to the kind of work they can do effectively in different vocational settings.
4. A continuous general clinical enquiry into the individual symptoms of the aging process and the chances of modification.
5. A continuous psychiatric clinical enquiry towards definition of the mental illnesses of the aged in terms of etiology and the grading of capacity in living on such a basis.
6. A statistical study of in-hospital population trends among the ageing groups, split up more accurately into the aged clinical syndromes.

Each of these items appears obvious: but each has been neglected. Put together in this way they represent a plea for expert interest as opposed to inexpert expediency.

#### REFERENCES

1. Fourteenth Annual Report of Mental Institutions, Dominion Bureau of Statistics, 1945.
2. Old People—Report of a Survey Committee on the Problems of Aging and the Care of Old People, published by The Nuffield Foundation, 1947.
3. Report of the First Ontario Conference on Social Welfare, University of Toronto, 1947.
4. The Population of Ontario from 1921 to 1965, Ontario Department of Health publication, 1944.
5. DAYTON, N. A.: New Facts on Mental Disorder, Charles C. Thomas, Baltimore, 1940.
6. EYSENCK, M. D.: *J. Ment. Sc.*, 92: 171, 1946.
7. GILLIN, J. L.: Social Pathology, Appleton-Century Company, New York, 1946.
8. GOLDSCHMIDT, H.: *J. Ment. Sc.*, 92: 182, 1946.
9. LAWSON, G.: Chapter in Problems of Aging, E. V. Cowdry, editor, Williams & Williams, Baltimore, 2nd ed., 1942.
10. LEWIS, A.: *J. Ment. Sc.*, 92: 150, 1946.
11. MAYER-GROSS, W.: *J. Ment. Sc.*, 90: 316, 1944.
12. SHELDON, J. H.: *The Lancet*, 254: 621, 1948.
13. *Idem*: The Social Medicine of Old Age, published by The Nuffield Foundation, 1948.
14. SHOCK, N. W.: The Mental Disorders in Later Life, Chapter III, edited by Oscar J. Kaplan, Stanford University Press, 1945.  
*Brit. M. J.*, 2: 839, 1941.
15. STEPHENSON, W., PENTON, C. AND KORENCHEVSKY, V.: *Brit. M. J.*, 2: 839, 1941.
16. WILLIAMS, H. W., QUESNEL, E., FISH, V. W. AND GOODMAN, L.: *Am. J. Psych.*, 98: 712, 1941.

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Truth is tough. It will not break, like a bubble, at a touch; nay, you may kick it about all day like a football, and it will be round and full at evening. Does not Mr. Bryant say it Truth gets well if she is run over by a locomotive, while error dies of lockjaw if she scratches her finger.—O. W. Holmes.

**LUPUS VULGARIS AND VITAMIN D<sub>2</sub>\*****Emile Gaumond, M.D.**

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LUPUS vulgaris is the most common form of cutaneous tuberculosis. It is much less frequent in America than in Europe. In the region of Quebec, very few cases are seen and represent a very small proportion of all the common cutaneous diseases.

Of the 19 patients who have been treated for two years, 3 have come of their own accord, and 8 have been recalled to our hospital because we had a new treatment for their disease. The names and the clinical diagnosis of these patients were already known. Most of the other 8 patients had learned from their physicians that a new and very efficient treatment could cure them. Two of them came from the United States.

All medical authors state that lupus vulgaris is commoner in women than in men. Among our 19 patients, 10 are women and 9 men. Numerous conditions predispose to this affection, the origin of which is endogenous or exogenous. The constitution of the patient, heredity, contagious diseases, specially measles, predispose to this disease.

Lupus vulgaris destroys, ulcerates, disfigures and very often heals with disfiguring scars. The face is its most frequent site, particularly the cheeks, nose, lips, eyelids, ears and neck. It is less frequent on the limbs and the body, but the mucous membranes of the eyelids, of the mouth, of the pharynx and of the larynx can be the seat of this disease. Lupoma is the characteristic dermatological lesion and can be well demonstrated by glass pressure which shows the "apple jelly" or "sucre d'orge" nodules.

Lupus vulgaris is at the very first a chronic dermatosis; it can be latent for intervals and can develop again from the scar or from any other part of the skin. Recrudescences generally occur in spring or in winter. Basal-cell or squamous-cell carcinoma occasionally occur in areas of long duration.

Lupus vulgaris, owing to the mutilations and scars that it causes, represents essentially a

social problem. The treatment has always been more or less unsatisfactory. Such measures as Finsentherapy, roentgentherapy, generalized ultra-violet rays, electro-surgery associated or not with Gerson-Sauerbrück diet and the administration of large amounts of cod liver oil very often gave disappointing results.

In the month of July, 1943, Charpy, from Dijon (France), reported some remarkable results that he had obtained in the treatment of lupus vulgaris with large doses of an alcoholic solution of vitamin D<sub>2</sub> (calciferol). On account of the war, we became aware of this medical treatment only in 1946. At that time, a Belgian physician, Fanielle, was also treating his patients with an alcoholic solution of vitamin D<sub>2</sub>, but it seems that he was giving smaller doses. English dermatologists, almost at the same time, were using the same vitamin D<sub>2</sub> in oil but the dosage employed was very different.

Charpy's treatment, which has been employed for our 19 patients, has been slightly modified by us and is as follows: oral intake of 15 mgm. of vitamin D<sub>2</sub> (600,000 units) in an alcoholic solution. This dose is given three times during the first week; twice, during the next three weeks and once a week for a period of months. It is advisable to take one pint to one quart of milk every day; those who dislike milk may take calcium in other form, twenty days a month. Other dietary measures include reduction in the salt intake and the restriction of foods rich in fat. We will report solely the observation of three of our 19 patients who have been treated for lupus vulgaris; the other cases will be published later but the results that we have obtained from this treatment for all our patients are almost the same in consideration of the time elapsed since the beginning of the treatment and of the extent of the lupus. May we add that the lupus of longest standing had persisted for fifty years and the most recent for six or seven years.

**CASE 1**

The details of the first case, Mrs. J.F., aged 35, in 1948, have been related in detail in the February, 1947, issue of the *Canadian Medical Association Journal*. She had had extensive lesions on the face, left arm and leg since the age of four. Up until receiving vitamin D<sub>2</sub> these lesions had steadily spread. Vitamin D<sub>2</sub> was started in August 1946, with early and striking improvement. Her follow-up history is as follows.

The patient is gradually returning to her normal and social activities and this social recuperation, with the physical improvement, can be put down as a benefit of the treatment. The treatment is very well tolerated without any digestive or other troubles. The blood urea is 47%. The patient is seen nearly every month; her

\* Read at the Seventy-ninth Annual Meeting of the Canadian Medical Association, Section of Medicine, Toronto, June 23, 1948.

improvement is steadily progressive and a complete cure is anticipated.

In January, 1948, she was hospitalized for a few days because we wished to be sure that the anatomical result was as good as the clinical one. At that time, vitamin D<sub>2</sub> had been administered without interruption for eighteen months. Tests made at irregular intervals (Table I) show no abnormalities with the exception of

TABLE I.

MRS. J.F.

DATE OF BEGINNING OF TREATMENT: AUGUST 12, 1946

	Dec. 20 1946	April 11 1947	Jan. 22 1948	March 31 1948
Non-protein nitrogen...	65%	47%	61%	49%
Sérum calcium...	10.5%		10.0%	10.3%
Urine analysis...	normal		normal	normal
Weight.....	76	83	90	92

## CASE 2

G.M., from the United States, 32 years old in 1947, has had lupus vulgaris for thirty years. The desire to be cured of his dermatosis brought him to four different countries.

The first lesion appeared in 1917-18 at the site of a burn by boiling water, on the right arm and buttock. When the patient was fifteen years of age, another lesion appeared on the left side of the back. In 1937, another spot was manifest on the right cheek.

From the beginning and for many years, treatment consisted mostly in application of different powders and ointment. He visited many countries and clinics, without being helped. The suggested treatments were very numerous: roentgentherapy; very special diets (baked tomatoes and cereals, seven times a day!) suggestions too for surgical treatment and topical applications of chemicals. In the fall of 1946 he followed the advice of an American dermatologist who referred him to a medical centre where the treatment of tuberculosis with streptomycin was being investigated.

In March, 1947, a biopsy was made at the Mayo Clinic. The report from the Clinic was as follows: "A

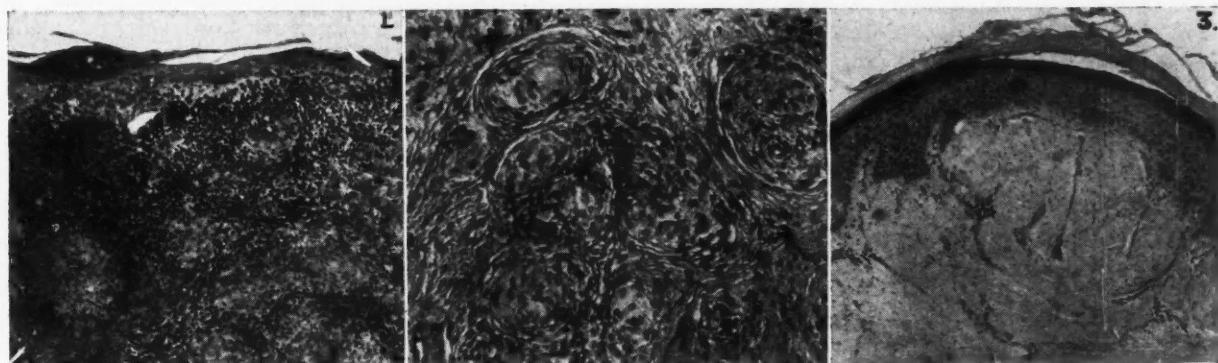


Fig. 1. (Case 1).—Lupus vulgaris before treatment. X 115. Fig. 2. (Case 1).—After 4 months of treatment. Note the abundant fibrosis and the naked and atrophic aspect of the follicles. X 230. Fig. 3. (Case 1).—After 16 months of treatment. The derma is sclerotic and practically devoid of cellular infiltrate. X 115.

the blood urea 61%; this figure is however lower than the one of February 20, 1946 (65%) and has been 47% in April, 1947 and 49% on March 31, 1948.

Biopsy was taken when the patient was first seen (Fig. 1). This was repeated after four months' treatment (Fig. 2) and is evidence of the healing process. A third biopsy from the same area as the second one, was taken after 16 months' treatment (Fig. 3). There is now no trace of any tuberculous process.

In the fragment examined, the derma shows a scar-

specimen for biopsy from the skin of the arm revealed the histopathological picture of lupus vulgaris. I believe the patient should have a tuberculin test, preferably with purified protein derivative and also roentgen examination of his chest. I would also suggest pushing the injection of vitamin D<sub>2</sub> in larger doses. Our results in the treatment of lupus vulgaris with streptomycin have not been very encouraging. Whereas considerable involution of the lesions may result from the administration of streptomycin in one patient a specimen for biopsy taken after a prolonged period of treatment revealed microscopically that the disease was still present and active. There is no contraindication however, to giving the patient a course of streptomycin if you so desire." I thank Dr. Hamilton Montgomery of the Mayo Clinic for his permission to reproduce a part of his letter to the patient's doctor.

In March, 1947, the patient started treatment with vitamin D<sub>2</sub> for a few weeks but in inadequate doses. On May 6, 1947, we saw him in Quebec for the first time; at that time we had had ten months' experience with the treatment, having used it in many cases.

The patient was indeed very anxious, and his coming to Quebec was a proof of it, to receive this form of treatment.

On the right cheek we could see an active patch of lupus which had appeared ten years before—as well as the scar of a surgical intervention. On the right arm (Fig. 6) there was a large lesion which had appeared 29 years ago. The right buttock was also the site of a large patch (Fig. 7) of the same nature but ulcerated in the centre. At the left side of the back there was (Fig. 8) a little area of twenty years' standing. All the skin lesions had the same characteristics: oedematous



like sclerosis with only here and there a few round cells. The epidermis is regularly and moderately atrophic. This last result furnishes the proof without any doubt that the lupus is cured both clinically and anatomically. All the lesions were well healed and white, except for two or three spots with a mild condition of keloid (Fig. 4 and 5).

redness, pronounced scaling, and lupomas easily demonstrated by glass pressure.

The patient had been using for some time prominent jelly, ultra-violet rays and, for a few weeks, small amounts of vitamin D in capsules, without results.

The family history showed that two uncles and two aunts, on his mother's side, suffered from pulmonary tuberculosis. We may recall that the beginning of his illness started after a burn on his right arm.

On May 6, 1947, treatment with the alcoholic solution of vitamin D<sub>2</sub> according to Charpy's technique was started. Seen again on December 12, the ulcerated lesion of the buttock of fourteen months' duration had healed rapidly in six weeks. All the lesions were less congestive; the patient felt very well; ate well, and gained five pounds in spite of whooping cough in July. He was taking the alcoholic solution of D<sub>2</sub> (600,000 units once every six days) (Figs. 9, 10 and 11) at his own request he now takes his medicine every five days. The non-protein nitrogen of January 28, after eight months of treatment, was 33% and blood calcium, 10.6%. The urinalysis, at the same date, was normal.

He was seen again on May 5, approximately one year after the treatment was begun. All lesions were con-

tinued to take his alcoholic solution of D<sub>2</sub> (600,000 units) every five days. On May 3, the non-protein nitrogen was 33.5%, calcium 10.2% and urinalysis, negative (Table II).

Three years ago, his physician removed two small tumours (?) which had arisen on the lupic lesion of the arm.

This patient is no doubt not completely cured and the treatment must be prolonged for some time still, but everything, particularly the absence of lupomas at diascopy, leads us to believe that a cure will be obtained. A control biopsy will be made in a few months' time and it will most surely be possible at that time to show that the cure is not only clinical, but also anatomical.

#### CASE 3

D.G., 36 years, is one of our patients whom we had seen for the first time, ten years ago. The diagnosis at that time was lupus vulgaris of the nose, of the upper lip, of the right eyelid, of the uvula and of the upper left gum. A biopsy had shown the picture of lupus vulgaris. The patient had stayed in different hospitals, where he received numerous and varied treatments; curettings, electrosurgery, roentgenotherapy, diets, different ointments, with little results.

From 1942 to 1947, we had lost sight of him. In January, 1947, we asked him to return for the new form of treatment. His face was now completely covered with oozing crusts and here and there lupomas could be demonstrated by glass pressure. The extremity of the nose was scarcely visible. His right eye had lost its vision because it had been destroyed almost completely by a suppurative process probably of the same nature as the lupus. His mouth was narrowed by scars and its opening was so small that it was impossible to search for lesions of the mucous membranes, although the patient complained of pain (Fig. 12). Our patient was very miserable; he dared not show himself, and he lived the life of a recluse in his brothers' house.

Treatment with vitamin D<sub>2</sub> in alcoholic solution was started on January 27, 1947. After six weeks of this treatment, the lesions of the face were greatly improved; only four small crusts could be seen near the nose and the corners of the lips (Fig. 13).

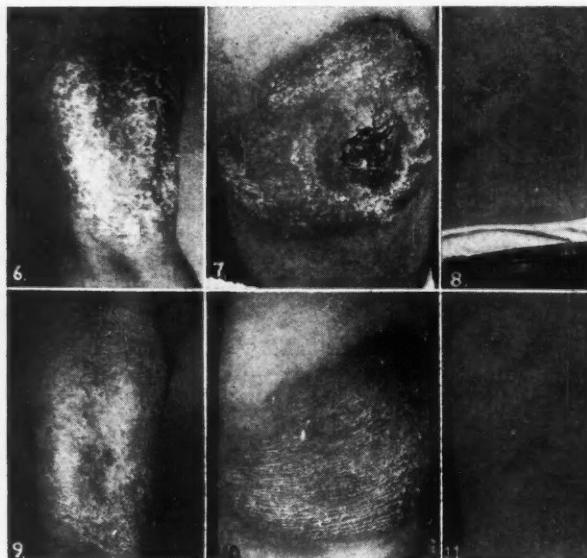
The vitamin was well tolerated and, for the first time in several years, the patient felt encouraged. The treatment was continued.

On April 28, 1947, he returned. All the crusts had disappeared and the healing was excellent. The skin, pink in the areas where lupomas could be seen before, had a good appearance and no lupomas were visible. The treatment was still well tolerated; our patient had gained ten pounds in weight. He was enthusiastic about the treatment. He asked whether we could widen his mouth and thought of having his eye removed and replaced by an artificial one. He showed evidence of wanting to work again.

By August, 1947, the healing was complete; the skin was thin but firm. In January, 1948, plastic surgery was performed (Dr. F. Roy) to enlarge his mouth. At the same time, a specimen for control biopsy was taken and the pathological report (C. Auger) was "Two small fragment of skin showing scar-like sclerosis of the derma with only a few scattered round cells" (Fig. 14).

In February, the right eye was removed by Dr. Jean Lacerte and the pathological report read as follows: "The eye examined shows an intense chronic inflammatory infiltrate of the cornea and some areas of degeneration in the retina, but no signs of tuberculosis".

The Wassermann and the Kahn tests were negative. Blood urea was 42 mgm. % after one year of continuous treatment. Blood calcium was 10.6% and the urinalysis and the roentgenogram were normal (Table



siderably improved. The lupic patch on the right cheek had completely disappeared and only a small scar, sequela of the previous surgical intervention could be seen. On the back, only a mild redness with a slight desquamation was present. No lupomas were visible by glass pressure.

The aspect of the arm lesion had completely changed. The skin was slightly red and squamous, but it was impossible to find any lupomas, which months previously could be easily seen, especially at the periphery. On the buttock, the same changes were seen. The skin was particularly white and soft in the area previously ulcerated.

The patient has now been taking vitamin D<sub>2</sub> in alcoholic solution for one year; he feels well, his appetite is excellent, he is less concerned with his dermatosis; he has gained approximately ten pounds in a year and has no complaint whatsoever. For five months he

TABLE II.  
G.M.

DATE OF BEGINNING OF TREATMENT: MAY 6, 1947

	January 28, 1948	May 3, 1948
Non-protein nitrogen...	33%	33.5%
Sérum calcium.....	10.6%	10.2%
Urine analysis.....	normal	normal
Weight.....	172	181

III). On January 26, 1948, a tuberculin test was strongly positive.

This patient has received no medication except vitamin D<sub>2</sub> and no topical treatment. After one year, he can be regarded as cured of a lupus from which he had been suffering for ten years (Fig. 15). The patho-

are no deleterious effects. Some of the treated patients had been suffering from lupus for 20, 30, 40 and 50 years and were 25 to 62 years of age. None showed any side effects serious enough to oblige the cessation of the medication; on the contrary, all gained weight and felt well. On the other hand, it seems that the individual susceptibility to this drug varies greatly. The non-protein nitrogen and the calcæmia, even after a treatment of nineteen months, never attained disturbing figures.

Is there any advantage in giving vitamin D<sub>2</sub> in alcohol, rather than in oil? Opinions are divided on this point. In France, the alcoholic solution is used and in England a solution in oil is usually given. In both cases the results are appreciable, but according to the French authors it seems that their results are superior. Not much can be found in the American literature on this subject. At the Mayo Clinic (Dr. Montgomery), it is believed that "it is becoming increasingly evident that the type of vitamin D and its method of administration or the vehicle used makes little, if any, difference in regard to results". (Personal communication).

Until more facts support this way of thinking, we will continue to use the alcoholic solution on account of the good results obtained with it, without any harmful effects.

For some time, we have been investigating the use of vitamin D<sub>2</sub> (caleférrol) in an aqueous solution. Two patients suffering from tuberculous orchitis-epididymitis are receiving injections of a preparation furnished by the United States Vitamin Corporation. Not enough time has elapsed since the beginning of the treatment to be able to give a sound opinion on the real value of this method of treatment, but for the moment the results are very encouraging and promising. We have just begun to prescribe the same aqueous solution of D<sub>2</sub> *per os*. We hope that some day vitamin D<sub>2</sub> may be obtained in an appropriate vehicle for intravenous and intraspinal administration.

Vitamin D<sub>2</sub> may be given credit for another point. Patients suffering from lupus are in some cases poor, but also in some cases well to do. In all cases, their dermatologic lesion is the cause of serious inconvenience. This treatment, on account of its results, returns to these patients the joy of life, is for them a moral as well as

TABLE III.  
G.G.

DATE OF BEGINNING OF TREATMENT: JANUARY 27, 1947

	January 27 1947	April 28 1947	January 23 1948
Non-protein nitrogen.....			42%
Sérum calcium.....			10.6%
Urine analysis.....			normal
Weight.....	121	131	139

logical examination has proved that this cure was anatomical as well as clinical. The patient has regained self-confidence and the joy of living; he is gradually losing the inferiority complex brought on by his dermatosis; he feels very well and is comparatively happy. We hope that plastic surgery will succeed in improving still more the appearance of our patient's face, which some physicians thought was disfigured by leprosy.



Fig. 14. (Case 3).—After 12 months of treatment. Section showing the same cheloid sclerosis as in Fig. 3.

The effects of the treatment in the three cases presented here cannot be disputed, as can be seen in the photographs taken at various periods and in the control biopsies performed in two cases, where a cure, not only clinical, but anatomic, is evident. Similar results were obtained in the 16 other cases, except in one where a few lupomas still persisted after an extended treatment. It may be emphasized that in these 19 cases, no other treatment, general or local, besides vitamin D<sub>2</sub> in alcoholic solution, was given.

The absorption of vitamin D<sub>2</sub> in large quantities is no doubt dangerous, but it seems that when taken in the doses prescribed here, there

a physical stimulus and affords them an excellent method of social recuperation; they return to the social habits that they had practically abandoned.

Attention must be drawn again to the fact that the cure that has been achieved is not due to a calcification of the lesions but to a sclerosis.

Vitamin D<sub>2</sub> has also good results in certain other forms of tuberculosis. Many of our confrères in Quebec have treated or are actually treating cases of lymph gland tuberculosis, tuberculous ulcers, tuberculous laryngitis, tuberculous osteitis, or tuberculous lesions of the urinary tract, with results that have encouraged them to continue this treatment. In regard to pulmonary tuberculosis, it seems evident that insufficient efforts have been made to overcome the difficulties encountered in the treatment of this disease by vitamin D<sub>2</sub>.

We have used vitamin D<sub>2</sub> in solution in alcohol for two cases of chronic lupus erythematosus, one of the face and the other of the scalp, and we must say that this treatment has yielded very surprising results. We cannot however draw a sure inference from these results, because of the very limited number of cases.

Some therapeutists treat even cases of sarcoidosis with vitamin D<sub>2</sub>. In the course of the treatment of chronic rheumatism by vitamin D, we have seen numerous cutaneous lesions of sarcoidosis appear and the nature of their lesions has been verified histologically.

As well as all the other physicians who have used vitamin D<sub>2</sub> for the treatment of various forms of tuberculosis, we have noted, at the beginning of the treatment, a temporary exacerbation of the already existing tuberculous phenomena. It seems that this is really a direct biotropic effect on the Koch bacillus. However the mode of action of vitamin D<sub>2</sub> towards the Koch bacillus or the tuberculous lesion is not yet clearly elucidated. The experiments of Lansberg, of Levaditi, of Raab and of Jensen would seem to point to a bactericidal action; the experiments of Charpy, recently reported by Gougerot before the members of the French National Academy of Medicine, indicate a bacteriostatic action. Charpy assumes that vitamin D<sub>2</sub> acts as an inhibitory agent and effects dephosphorylation of the enzymes that the Koch bacillus derives for its own respiration from the organism on which this germ is a parasite.

In the animal, according to Dr. Giroux, vitamin D<sub>2</sub> in an alcoholic solution seems incapable of hindering tuberculization.

Finally, one may ask whether vitamin D<sub>2</sub> could not become an efficient treatment for leprosy, this latter disease being, at least bacteriologically, very closely related to tuberculosis. We have asked that a trial of vitamin D<sub>2</sub> in solution in alcohol be made in the treatment of leprosy at a leper-hospital in Japan.

#### SUMMARY

Nineteen patients suffering from lupus vulgaris have been treated by an alcoholic solution of vitamin D<sub>2</sub>. Three cases are described in detail. The cure provided by this vitamin is not only clinical but anatomical.

The medication has been very well tolerated by all the patients. No unpleasant incidents have been observed even after continuous treatment for eighteen months.

The mode of action of vitamin D<sub>2</sub> (calciferol) in the treatment of external tuberculosis is not yet understood. It may be dephosphorylation.

Vitamin D<sub>2</sub> seems to be efficient in other forms of tuberculosis. We wonder if this vitamin could not be useful in the treatment of leprosy. A clinical trial will be made.

Vitamin D<sub>2</sub> has been provided by The British Drug Houses (Canada) Ltd., Toronto, Ontario.

I am indebted towards Dr. Carlton Auger and Dr. Henri Marcoux who have been of great help in the preparation of this paper.

#### BIBLIOGRAPHY

1. BECKER, S. W. AND OBERMAYER, M. E.: *Modern Dermat. & Syph.*, p. 354, 1940.
2. CHARPY, M. J.: *Bull. Soc. Franc. de Derm. et Syph.*, 11: 340, 1943.
3. *Idem: Ann. de dermat. et syph.*, 6: 310, 1946.
4. CHARPY, M. J. AND GOUGEROT, H.: (*Communication Académie nationale de Médecine*, March 23, 1946).
5. DOOLING, G. B., PROSSER, T. E. W. AND WALLACE, H. G.: *Proc. Roy. Soc. Med.*, 39: 225, 1946.
6. GAUMOND, E. AND GRANDBOIS, J.: *Canad. M. A. J.*, 56: 205, 1947.
7. *Idem: Laval méd.*, 12: 571, 1947.
8. GRANDBOIS, J.: *Laval méd.*, 12: 829, 1947.
9. GIROUX, M.: *Laval méd.*, 13: 710, 1948.
10. JENSEN, T.: *Ann. de derm. et syph.*, 1: 36, 1948.
11. LANSDERG, L. M.: Contribution to the knowledge of the bacteria-flora of some pharmaceuticals, Thesis, Leiden University, 1919.
12. LAPIERRE, S.: *Ann. de dermat. et syph.*, 6: 350, 1946.
13. LEFEVRE, P. AND HALLE, G.: *Ann. de dermat. et syph.*, 6: 355, 1946.
14. LEVADITI, M.: *Ann. dermat et syph.*, 5: May-June, 1946.
15. MACRAE, D. E.: *Brit. J. Dermat.*, 59: 333, 1947.
16. MICHELSON, H. E.: *Arch. Dermat. & Syph.*, 56: 3, 317.
17. *Idem: J. Am. M. Ass.*, 136: 1034, 1948.
18. PAUTRIER, L. M.: *Traité de Pathologie médicale*, 21: 589, 1930.
19. RAAB, W.: *Dis. Chest.*, 12: 409, 1946.
20. REED, C. L., STRUCK, H. C. AND STECK, I. E.: Vitamin D, University of Chicago Press, 1939.
21. DESMEULES, R., ROUSSEAU, L., RICHARD, P. AND DORVAL, C. H.: *Laval méd.*, 13: 3, 1948.
22. SCHNEIDER, R. W. AND KAMMER, H.: *Cleveland Clin. Quart.*, 15: 82, 1948.

## RÉSUMÉ

C'est depuis les travaux de Charpy, en France (1943), que l'on connaît les propriétés remarquables du calciférol (ou vitamine D<sub>2</sub>) pour le traitement du lupus. Cette forme de tuberculose cutanée siège ordinairement à la face et se manifeste par l'ulcération, la destruction des tissus et la formation de cicatrices défigurantes. Les lupomes sont des nodules qui donnent, à la vitro-pression, l'aspect caractéristique de gelée de pomme ou de sucre d'orge. Jusqu'à la découverte de la thérapeutique actuelle, le lupus avait une évolution toujours longue et souvent indéfinie. L'auteur a soigné 19 malades, avec des résultats positifs dans tous les cas. Il rapporte ici trois de ces patients, traités par l'usage buccal de la solution alcoolique de calciférol. L'observation prolongée et la biopsie ont démontré l'arrêt complet du processus morbide dans deux cas, et un mieux considérable dans le troisième. Il n'y a eu ni phénomènes toxiques, ni élévation de la calcémie, ni trouble de la fonction urinaire, même après dix-huit mois de traitement. Le calciférol paraît exercer une action bactériostatique sur le bacille tuberculeux.

PAUL DE BELLEFEUILLE

## THE TREATMENT OF PNEUMOCOCCAL MENINGITIS\*

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BEFORE chemotherapy, pneumococcal meningitis was almost always a fatal disease. Although this is no longer true, it is still important to consider the best means of employing modern methods of treatment so that the complications and mortality rate may be reduced as much as possible. Prior to penicillin, sulfonamide therapy had reduced the mortality rate to approximately 70 to 80%. Since the introduction of penicillin the mortality rate has declined much further, but more cases of purulent meningitis are seen now which were not so evident when patients rapidly became moribund soon after the disease was discovered.

Twelve consecutive patients will be discussed who have been treated during the last eighteen months in the Montreal Neurological Institute and the Jewish General Hospital in Montreal. Most of them were treated personally by the authors, others have been under the care of the neurological or neurosurgical services of the Montreal Neurological Institute.

## DATA

There were 6 male and 6 female patients; the men were from 19 to 73 years of age, and the females from 2 months to 64 years. One of the

patients was a 33-year old woman with diabetes mellitus.

The presenting symptoms were as follows:

	No. of cases
Headache.....	12
Stiff neck.....	3
Drowsiness.....	6
Mental changes.....	7

Headache appears to be an invariable component of the disease and in some of the patients it was exasperating. It is curious that in this series only a small number complained of a stiff neck. Drowsiness and stupor of varying degree were present in half the cases. Mental changes were also quite prominent, usually in the form of delirium, disorientation, and hallucinations, and in some instances these symptoms were very severe and of grave concern to the patients' relatives. One patient, a young man of good physique displayed acute mania for several hours and following admission to hospital could only be adequately controlled by large amounts of sedative drugs. He subsequently made a complete recovery.

The presenting signs and their frequency were as follows:

	No. of cases
Neck stiffness.....	7
Kernig's sign.....	7
Hyperreflexia.....	1
Plantar extension.....	2

Fever was variable. In many of the cases it was not present immediately on admission but appeared soon after. Only slightly more than half the patients showed stiffness of neck and a positive Kernig's sign at the time of admission.

A careful history usually contributed the clue to the understanding of the pathogenesis and portal of entry of the infection. Factors such as old or recent otitis media, mastoiditis, upper respiratory or sinus disease, head injuries with fracture of the skull, and pneumonia could be frequently elicited. However, clinically active foci of infection were present in some cases without yielding any clear-cut symptomatology that could be obtained from the history. The primary focus and the number of patients concerned in each was as follows:

	Condition	No. of cases
Recent ear or mastoid disease.....	6	
Upper respiratory and sinus disease.....	5	
Head injury, recent.....	3	
Head injury, old.....	2	
Pneumonia.....	2	

\* From the Montreal Neurological Institute, McGill University and the Jewish General Hospital, Montreal.

In several instances, a patient showed more than one potential source of infection, both the ears and the sinuses being involved.

Spinal fluid examination added invaluable evidence of diagnostic importance in all of the patients, and in every instance the etiological agent was discovered at the time of the first lumbar puncture. The following table summarizes the main features of the spinal fluid findings in the twelve patients on admission.

Pressure:	270 to 700 mm. H <sub>2</sub> O.
Colour:	Turbid to greenish yellow
Protein:	250 to 875 mgm. %
Sugar:	In 8 cases, less than 20 mgm. % In 3 cases, it was 21, 26, and 22 mgm. % In 1 case, 94 mgm. %
Cells:	From 2,000 to 20,000 per c.mm.
Cultures:	All showed pneumococci growing from the C.S.F.

X-ray examination, especially of the head, proved to be an important part of the investigation in guiding the subsequent course of treatment. The major findings may be listed briefly:

X-ray findings	No. of cases
Mastoid infection.....	4
Sinus infection.....	8
Evidence of trauma, recent.....	3
Evidence of trauma, old.....	2
Pneumonia.....	1

In only one instances did the x-ray fail to corroborate what was considered to be a clinically active infection in the nose and throat. Much more frequently the x-ray showed evidence of infection which could not be detected by clinical examination.

#### TREATMENT

The discussion of treatment may be divided into two parts: first, the combating of the infection by means of chemotherapy and second, the treatment of the focal infection. Both are equally important, and in most instances it was evident that without early treatment of the primary focus by appropriate means, adequate control of the meningitis was not possible.

Sulfonamides were employed in all of the cases. The actual dosage schedules varied in detail only. In nine patients sulfadiazine was given in a dosage of 2 gm. initially and 1 gm. thereafter every four hours. In four instances, soluble sulfadiazine or sulfathiazole was given intravenously or intramuscularly because the patients were not able to take oral therapy. The level of sulfonamides was controlled by

means of blood estimations and this aided in adjusting the dosage in some instances.

Penicillin was employed in all the patients. In every instance it was given by the intramuscular route; in nine of the twelve patients it was also given intrathecally and in one instance intraventricularly. The intramuscular dosage varied from 5,000 to 100,000 units every three hours, the average dose being 30,000 units. Because we were trying out various forms of treatment, no uniform dosage was used intrathecally and amounts varying from 5,000 to 100,000 units were injected into the lumbar subarachnoid space once or twice daily. Intraventricular penicillin was given twice to one of the patients.

It was considered to be of paramount importance to establish early in the course of treatment what was the source of the infection. After chemotherapy had been started and as soon as the patient's general condition permitted, it was felt that treatment of the primary focus should be undertaken. This often required the active co-operation of the otolaryngologist or neurosurgeon and in many instances the patient's recovery depended on this.\*

The following procedures were carried out during the course of treatment:

	No. of cases
Paracentesis.....	1
Mastoidectomy.....	4
Sinus irrigation.....	3

#### RESULTS

	No. of cases
Complete recovery.....	10
Recovery complicated by transverse myelitis.....	1
Died.....	1

The results in this small series of cases are extremely satisfactory, as compared with previously reported statistics.

There was only one death and this was not due primarily to meningitis. This patient, a 73-year old man was improving clinically from his meningitis but died of bronchial obstruction caused by the aspiration of mucus and sanguineous discharge which accumulated in the immediate postoperative period following a simple mastoidectomy and endo-nasal antrotomy.

One patient developed transverse myelitis following the intrathecal injection of penicillin.

\* It is a pleasure to acknowledge the excellent co-operation received from members of the staff of the Royal Victoria and Jewish General Hospitals in this regard.

He also suffered marked intellectual deterioration, presumably the result of cerebral damage arising from his infection. He was a man of fifty who was extremely ill on admission with drowsiness, dehydration, and evidence of right-sided weakness. Intraventricular penicillin was given twice through twist-drill holes, and he received intrathecal penicillin three times. In each of the latter instances, 1 c.c. of undiluted crystalline penicillin containing 10,000 units was used. The spinal injection which presumably caused the transverse myelitis was given after a ventricular puncture had been carried out to reduce the pressure and considerable fluid was allowed to escape. When the lumbar needle was inserted the pressure was very low and some difficulty was encountered so that the spinal puncture was a traumatic one. The day after the injection the patient developed urinary incontinence and there was no reaction to pin-prick in the lower extremities. He required catheterization and tidal drainage thereafter. When the transverse myelitis developed the patient was unconscious. Subsequently he regained consciousness and recovered completely from the meningitis but he was never completely rational in the subsequent period of observation. He made no attempt to care for himself intelligently and frequently manifested evidence of mild disorientation. Presumably, he had sustained diffuse cerebral damage due to thrombosis of the cortical veins occurring as the result of his meningitis.

Walker and Johnson (1946) investigated experimentally in monkeys the effect of the intrathecal administration of penicillin, using doses varying from 10,000 to 20,000 units. Although the animals showed no demonstrable neurological defect the cauda equina in over half the animals showed patchy demyelinization and proliferation of the pia-arachnoid. It is difficult to be sure in the instance of the patient reported above whether the myelitis was secondary to a vascular lesion or due to the direct toxic effect of the drug on the spinal cord.

#### DISCUSSION

The lack of uniformity in the treatment of patients with pneumococcal meningitis reported in the recent literature makes it difficult to compare the total results and to arrive

at definite conclusions concerning mortality rate. There are several reasons for this: in the cases reported earlier, penicillin was not available in large amounts and there were no standards of therapy to serve as a guide. Walker and Johnson (1946) summarized the results of 160 cases up to 1946 and showed that 55% recovered and 45% died. Patients under fifty years of age fared better than those older, and children seemed to do best of all. In a series of patients reported in great detail by Smith, Duthie and Cairns (1946) the overall mortality rate was much lower and the detailed discussion of their cases is excellent.

Because the results obtained by vigorous treatment are so much better today, and there is now sufficient experience to warrant it, some of the practical considerations illustrated by the patients in this series will be discussed further.

*Lumbar puncture.*—Lumbar puncture must be done as soon as possible since this provides the key to the diagnosis. A smear should be prepared and examined and the fluid cultured, so that a bacteriological assessment can be obtained in about twelve hours. If the smear shows the presence of Gram-negative organisms, it will be necessary to institute streptomycin therapy. In pneumococcus meningitis the fluid is usually heavily laden with pus cells and the organisms can nearly always be seen in the stained smear. If the cells in the spinal fluid are not predominantly polymorphonuclear, it indicates that the infection is probably not an acute purulent meningitis and influenzal, tubercular, or yeast meningitis should be suspected. The proteins, sugar, and chlorides in the cerebrospinal fluid and cell counts of subsequent samples are sensitive indices of the progress of the disease especially after the fluid has become sterile.

*Treatment of the primary focus.*—A thorough search must be made for evidence of the primary focus. No measure should be delayed which can aid in this regard. X-ray examination of the skull and chest, and detailed search of the nose and throat by an otolaryngologist, if possible, should be made. Neurosurgical treatment may be necessary if the meningitis is secondary to a brain abscess. In many instances, the specialist may have to proceed with surgical therapy of the primary focus or the meningitis cannot be adequately handled.

No time should be lost in providing whatever radical treatment is necessary as soon as the patient's general condition permits. The ravages of the infection are such that if treatment is delayed the patient's recovery may be jeopardized since his physical reserves will deteriorate the longer he remains critically ill.

*Chemotherapy.*—The dosage of sulfonamides, in this instance sulfadiazine, must be high enough so that an adequate blood level is maintained at all times. This should be approximately 15 mgm. % of free sulfadiazine. The total fluid intake must be kept up and the urine be examined for crystals. The use of orally administered sodium bicarbonate will help to avoid crystalluria by keeping the urine alkaline. The dosage of sulfonamide may have to be altered from time to time depending on the level of the drug in the blood. Estimates should be done daily in the morning and this will provide a base line for the following twenty-four hour period. The levels of both total and free sulfadiazine should be estimated since a high percentage of the conjugated form may lead to the false conclusion that a therapeutically effective level of drug is being obtained.

Penicillin treatment must be instituted as soon as the diagnosis is made. Before doing the lumbar puncture in a patient suspected of having meningitis, a supply of crystalline penicillin should be prepared for use. After the spinal fluid pressure is measured, the first few c.c. of fluid withdrawn should be examined, and if it appears cloudy, more fluid should be withdrawn and 10,000 units of penicillin in 10 c.c. of normal saline should be injected into the spinal canal. However, this should only be done if the puncture was entirely satisfactory and not a traumatic one. If there is any evidence that the cerebrospinal fluid pathways are blocked, it is unwise to carry out the injection of penicillin because it may become loculated and lead to subsequent damage.

Penicillin should be given intramuscularly in doses of 50,000 to 100,000 units every three hours. This will help to control the primary cause of the meningitis as well as the bacteræmia, but it may not, in some instances, control the meningitis without the addition of intrathecal penicillin. The latter should be given by lumbar puncture at least once, or in severe cases, twice daily. It is probably wise not to use more

than 10,000 units at a time, diluted in 10 c.c. of normal saline (Walker and Johnson, 1946). If at any time it becomes apparent that a free flow of spinal fluid cannot be obtained by the lumbar route, it may be necessary to perform intrathecal lavage with saline solution to flush out some of the fibrin deposits which may be interfering with the flow of fluid through the needle. This was carried out in one of the cases reported in this series and heparin was added to the saline. The result of this procedure was that a large amount of clotted material was obtained before the irrigating fluid was finally returned clear. After this, penicillin was injected, well diluted with saline. The procedure was carried out on several occasions and the recovery of this patient was excellent. In some cases, such an effort may fail and it may be necessary to perform a cisternal puncture for draining the fluid and injecting the penicillin solution; if a surgeon is available, intraventricular penicillin may be used and injected through a twist-drill hole.

If it is suspected that there is a severe ventriculitis, penicillin may be injected directly into the ventricles through a direct needle puncture. Several authors have shown that the medication reaches the interior of the ventricles when injected into the lumbar subarachnoid space, but a more concentrated effect is obtained by injecting 10,000 units of penicillin diluted in saline, directly into the ventricles. If the ventricular system is blocked by exudate in the aqueduct of Sylvius, direct ventricular puncture may become an urgent necessity and may have to be done frequently to reduce the pressure.

Chemotherapy should be continued till the temperature has been normal for five days.

*General measures.*—Since fluids are so vital to the general progress of the patient, and because they are required as a vehicle for intravenous sulfadiazine, it is wise to plan the total fluid intake for each twenty-four hour period in advance. This should be in the neighbourhood of 3,000 to 4,000 c.c. per day. Intravenous aminoacids may be given along with glucose in saline, and undoubtedly will aid in maintaining better nutrition. Care should be taken not to give sulfadiazine mixed directly with aminoacids or a precipitate will form.

Nursing care is important since so many of the patients are disoriented and unconscious. It must be directed to such general measures as

changing the patient's posture frequently and avoiding restriction of respiration by poor positioning in bed. Cleanliness of the mouth and throat must be emphasized, especially in patients with upper respiratory infection with copious discharge. In this way, pulmonary complications may be avoided. One of the cases in this series died of aspiration and pulmonary collapse when his meningitis was coming under control.

#### SUMMARY

Twelve cases of pneumococcus meningitis are presented which were treated by penicillin, sulfonamides, and early radical treatment of the primary focus of infection. Ten patients made a complete recovery, one died, and one recovery was complicated by transverse myelitis and mental deterioration.

It is felt that a successful outcome in the treatment of this condition depends on the intrathecal as well as intramuscular use of penicillin and especially on early and radical treatment of the underlying focus of infection. The latter is usually found in the sinuses and mastoids.

#### BIBLIOGRAPHY

1. SMITH, H. V., DUTHIE, E. G. AND CAIRNS, H.: *The Lancet*, 250: 185, 1946.
2. WALKER, A. E. AND JOHNSON, H. C.: Penicillin in Neurology, C. C. Thomas, Springfield, 1946.

#### RÉSUMÉ

Autrefois fatale presque à coup sûr, la méningitis à pneumocoques reconnaît aujourd'hui un meilleur pronostic. Les sulfamides avaient réduit le taux de mortalité à environ 70 p. 100; avec la pénicilline, les résultats sont meilleurs encore. Le présent article rapporte 12 cas avec un seul décès et un cas de myélite transverse. Cette dernière complication est en rapport probable avec l'usage intra-rachidien de la pénicilline; celui-ci est toutefois nécessaire dans la plupart des cas, en plus des injections intra-musculaires qui s'imposent toujours. Cette thérapeutique intra-rachidienne doit parfois s'accompagner de la ponction ventriculaire ou du lavage sous-arachnoïdien au moyen d'une solution salée héparinisée. Cette chimiothérapie ne peut donner ses meilleurs résultats que si l'on pratique l'ablation des foyers infectieux dont l'histoire du cas et l'examen ont montré l'existence chez chacun des malades de la présente série. Le pneumocoque se retrouve presque toujours dans le frottis de liquide céphalo-rachidien.

PAUL DE BELLEFEUILLE

Reading makes a full man, conference a ready man, and writing an exact man. And therefore if a man write little, he had need have a great memory; if he confer little, have a present wit; and if he read little, have much cunning to seem to know that he doth not.  
—Bacon.

## THE PREVENTION AND TREATMENT OF POSTOPERATIVE PULMONARY COMPLICATIONS BY BRONCHIAL ASPIRATION

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THE principles of the prevention of post-operative pulmonary disease as laid down by Jackson over twenty years ago, have in the last decade become accepted among most of the medical profession. These principles centre on that constant "watch dog" of the lungs, the cough reflex. Our duty as anæsthetists should be primarily to preserve as much as possible those working parts which assist in expelling foreign material from the bronchial tree, namely ciliary action, beehive blast and the tussive squeeze (*i.e.*, compression of the lung during cough). The preservation of these prevents to a great extent the occurrence of postoperative complications.

#### TYPES

**Atelectasis.**—The commonest postoperative pulmonary complication is atelectasis. This may occur as (a) massive collapse, (b) lobar collapse, (c) lobular collapse, the latter resembling a bronchopneumonia in the roentgenogram. The etiology of postoperative atelectasis is usually some mechanical obstruction, that is, the actual plugging of one or more bronchi by inflammatory exudate, thick tenacious purulent material, foreign bodies, blood, mucus, tumour, or vomitus, which has collected there or has been aspirated during anaesthesia. The atelectasis may appear suddenly or come on gradually, depending on the volume of the foreign material and to what extent the bronchial orifices are occluded. If this plug is not removed by change of position, coughing, or aspiration, the air trapped peripheral to the plug will be absorbed into the blood stream, emphysema will set in and pulmonary collapse will surely follow. The decreased ventilation from pain plus excessive secretions, plus increased bronchial tone or spasm, are probable causes.

**Pulmonary œdema.**—This complication has an acute onset.

**Pneumonia.**—This disease may be lobar or bronchopneumonia followed by atelectasis or associated with infarct.

*Pulmonary abscess.*—This complication may occur within a few days following tonsillectomy.

*Bronchiectasis.*—This condition is produced by an inflammatory infiltration of the bronchial walls with accumulation of exudate in the occluded bronchial lumina and develops slowly following unrelieved atelectasis.

*Foreign bodies.*—These may be aspirated during anaesthesia and lead to abscess formation, bronchiectasis or suppurative pneumonitis.

#### SIGNS AND SYMPTOMS

The severity of the signs and symptoms of atelectasis depends on the extent of the collapse. The cardinal sign is diminished respiratory excursion of the affected side. There is respiratory embarrassment such as dyspnoea, with or without chest pain and an increased respiratory rate. The temperature becomes elevated. There may or may not be cyanosis, the degree depending on the amount of pulmonary tissue involved. The patient has an anxious expression. There is loss of resonance and depression or absence of breath sounds on the affected side. The antero-posterior and lateral roentgenograms localize the area of atelectasis. They may show a shift of the trachea, heart and mediastinum to the affected side with a fixed elevated diaphragm and a relative opacity of the collapsed lung. The difficulty is not to recognize a massive collapse but to diagnose mild cases of atelectasis which show but slight rise in temperature, possibly a little elevation in pulse rate and an occasional coughing spell. Postero-anterior and lateral x-rays are here essential for proper diagnosis. Pulmonary oedema however may be ushered in by a productive cough, followed closely by anxiety, dyspnoea and cyanosis. As the condition progresses the patient may develop orthopnoea and expectorate pink frothy sputum. The pulse will gradually become weaker and the patient becomes unconscious and will surely die unless adequate therapeutic measures are instituted. Examination of the chest reveals fine subcrepitant or bubbling râles with some impaired resonance. The diagnosis of pulmonary oedema will be confirmed by the roentgenogram.

#### PREVENTION BEFORE OPERATION

The prophylaxis of atelectasis consists in minimizing the effect of preoperative medica-

tion. Morphine and the opiates inhibit ciliary function and impair the beehive blast. Atropine and hyoscine increase the viscosity of the secretions which may become so tenacious that the ciliated epithelium, whose action has been slowed up by sedation and anaesthesia, is unable to move them into the trachea. The action of too much sedation may also depress respiration and dull the important cough reflex, thereby lessening the patient's urge to clear his airway before being anaesthetized. It might be well to encourage the patient to clear his airway before the morning sedative is administered. Patients with upper respiratory or lung infection should not be submitted for operations of election. Patients with bronchiectasis or lung abscess should have bronchoscopy aspiration before operation.

#### PREVENTION DURING OPERATION

The anaesthetist should avoid prolonged anaesthesia because with a depressed cough reflex there is a greater tendency for the collection of bronchial secretions. Kidney and gall bladder tests, and steep Trendelenberg positions splint the diaphragm and restrict pulmonary activity and aeration. An overdose of curare may cause temporary paralysis of the respiratory muscles, decrease aeration of the lungs and lower lung resistance. Curare may so relax the glottis that unless an intratracheal catheter is in place, liquid contents backing into the pharynx may find their way into the trachea. There should be constant guard against the inhalation of septic material such as vomitus, mucus, or saliva. Too high concentrations of cold ether vapor may irritate the bronchial mucosa. The occlusion of a bronchus by placing an endotracheal tube too far down may produce a plug of tenacious mucus which is brought on by the damming-up and drying of secretions. The weight of the operator's arm or heavy instruments on the chest, inhibit the normal thoracic and abdominal respiratory movements and favour hypostasis in the lungs. High spinal anaesthesia may cause motor paralysis up to the fourth thoracic segment and the resulting paralysis of the lower intercostal muscles reduces pulmonary ventilation and favors stagnation of bronchial secretions.

## PREVENTION FOLLOWING OPERATION

The depression of respiration by narcotics, barbiturates, debility, shock or brain injury causes inadequate aeration of the lung and retards ciliary action in the bronchial mucosa. Small doses of morphine given oftener are better than larger doses spaced farther apart. The accompanying abdominal pain resulting from the operation and the postoperative elevation of the diaphragm by tight abdominal binders cause more shallow breathing and decrease lung aeration. Prolonged steep Trendelenberg position splints the diaphragm and interferes with normal respiratory exchange. The "stir-up regimen" should be carried out with every postoperative patient. This consists of turning the patient from side to side every hour, encouraging him to breathe deeply and to cough, to expel abnormal amounts of tracheobronchial secretions. The nurse may assist the patient by supporting the abdominal wall with firm pressure applied over the abdominal incision during the act of coughing. An attempt should be made to get the patient out of bed as soon as possible. Active breathing exercises assisted by oxygen or carbon dioxide help to open alveoli and release trapped secretions. The airway should be kept open until the patient has fully reacted and the cough reflex becomes active again. Severe back-slapping should not be used in cases of atelectasis because the violent respiratory effort which it initiates tends to drag the foreign material deeper into the bronchi and increase the hazard and extent of the atelectasis.

## TREATMENT

The conservative treatment of atelectasis consists in carrying out the "stir-up" regimen of deep breathing exercises, effective coughing, and radical changes in position, and if the atelectasis is not relieved in a few hours the patient should be subjected to bronchoscopic aspiration. The paroxysms of coughing which are initiated by this procedure and the encouragement of the patient to cough with the bronchoscope in place greatly assist in forcing foreign material from the smaller bronchioles to the large bronchi, where it can easily be aspirated. In some cases of acute pulmonary oedema only tracheal aspiration with a catheter may be necessary, but where definite evidence

of atelectasis is present aspiration bronchoscopy is indicated. Any atelectatic patient who is unable to clear his airway spontaneously should be subjected to bronchoscopic aspiration. The earlier this is done the more dramatic the result and the less danger of secondary pneumonia developing. The longer one waits the more difficult it becomes to re-expand the lung, because the more air that is absorbed distal to the plug the greater the difficulty of expelling that plug. No food or liquids are allowed after bronchoscopy for at least two hours. This is to allow for the return of pharyngeal and laryngeal reflexes, so that any attempt at swallowing might not result in aspiration of foreign material into the trachea. Oxygen with or without carbon dioxide may be given after bronchoscopy and the patient again encouraged to cough and clear his bronchial tree.

## SUMMARY

The anaesthetist-bronchoscopist can do much toward preventing postoperative pulmonary complications by establishing adequate pulmonary ventilation and endobronchial drainage. Aspirated foreign material in the tracheobronchial tree should be removed bronchoscopically while the patient is still anaesthetized and oxygen used liberally postoperatively. Early bronchoscopic aspiration of the post-operative atelectatic lung will usually be rewarded by a dramatic result. Postero-anterior and lateral x-rays taken in suspected cases where there may be only a slight rise in temperature, may show small areas of atelectasis which without spontaneous cure in a few hours should be subjected to aspiration bronchoscopy. Relief of either partial or complete bronchial obstruction in pulmonary atelectasis allows free ingress and egress of air with a return of the lung to its normal degree of aeration. The increased negative intra-pleural pressure on the side of the atelectatic lung causes a shift of the heart and mediastinum, elevation of the diaphragm and overinflation of the opposite lung. With atelectasis of only one lobe, overinflation and eventually emphysema of the other lobes of the same lung occur. The surgical importance of postoperative complications with the resulting increase in morbidity is obvious.

## CONCLUSION

The most critical time for the development of atelectasis is the first twelve hours post-operatively. The incidence of atelectasis is the same with spinal as with inhalation anaesthesia. The mechanism is due to hypoventilation from intercostal paralysis, change in diaphragmatic action and postoperative muscle splinting due to pain and respiratory depression due to excessive sedation. Chronic atelectasis may lead to lung abscess, bronchiectasis, or suppurative pneumonitis. Temperature, pulse and respirations drop rapidly to normal levels soon after the bronchial tree is clear of secretions and the lung properly aerated. The prompt treatment of postoperative pulmonary complications by bronchoscopic aspiration is a valuable aid to the surgeon, by reducing morbidity and clearing up many cases of acute pulmonary disease which would otherwise become chronic.

7 Durham St. S.

## RÉSUMÉ

Les douze heures qui suivent une opération sous anesthésie générale ou rachidienne constituent la période critique durant laquelle l'atélectasie est à craindre. On peut la prévenir dans une large mesure par la bronchoscopie aspiratrice avant la fin de l'anesthésie. L'atélectasie une fois constituée est justiciable de la même opération, sous peine de passage à l'atélectasie chronique, à l'abcès pulmonaire ou à la bronchiectasie. L'atélectasie post-opératoire, qui reconnaît pour cause la paralysie partielle des muscles respiratoires, se manifeste par des signes d'induration pulmonaire avec déplacement du médiastin et emphysème compensateur des lobes non collabés.

PAUL DE BELLEFEUILLE

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**INTRAVENOUS PROCAINE—  
CLINICAL APPLICATIONS\***

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THE intravenous exhibition of procaine hydrochloride represents a reversal of opinion which is almost unique in medical history. We had long been led to believe that one of the most surely fatal complications of the use of this drug was the accidental intravenous administration during the production of local anaesthesia. Even at the present time, when this form of

therapy has become well established in the practice of medicine, one meets the occasional sceptical colleague who is certain that the one result which may be expected is death. We may have been unusually fortunate, but so far, it has been possible to avoid this result in all our cases.

The earliest reported use of procaine by a deliberate intravascular injection was by August Bier on March 15, 1909. In Bier's method, of course, the veins were occluded proximal to the point of injection and the object was to produce anaesthesia of an extremity, the solution not being permitted to escape into the general circulation. This use differs in almost every respect, except that of intravenous administration, from what we now refer to as intravenous procaine therapy. So far as I am able to determine, the earliest report of the deliberate administration of procaine hydrochloride into the general circulation is that of Barany, published in 1935. Barany used intravenous local anaesthetic drugs to relieve tinnitus aurium. It is of interest to note that he used not only procaine, but also pontocaine and nupercaine, with equally good or better results. In 1939 Leriche reported in the *British Medical Journal*, the use of intravenous procaine to abort the inflammatory process by the production of vaso-dilatation. In 1941 Dos Gahli, Bourdin and Guiot reported the use of intravenous procaine in the treatment of peripheral vascular disease. In 1942 Lundy reported the intravenous infusion of procaine solutions for the relief of pruritus associated with jaundice. In the following year I reported a short series of cases in which the drug was given by this method for the relief of pain in severe burns. In 1945 McLachlin reported the relief of pain in postoperative patients by the administration of intravenous procaine, and Allen reported the production of general anaesthesia by this method. It is obvious that time does not permit a full review of this subject, and I will confine myself therefore to a description of those conditions in which I feel, from practical experience, that there is an indication for the use of this method of therapy. In doing so, I would like first to point out that those conditions which I shall describe cut across the whole practice of medicine, in every conceivable specialty.

The first indication for the use of procaine by the intravenous route, is, of course, for the relief of pain. I still believe that having regard to the

\* Read at the Seventy-ninth Annual Meeting of the Canadian Medical Association, Section of Anesthesia, Toronto, June 23, 1948.

inherent dangers in anaesthetizing these patients, there is no more satisfactory method of producing analgesia in patients suffering from severe burn. This opinion is borne out by the experience of many anaesthetists and surgeons who have employed the method since it was first described. The use of this drug for the relief of postoperative pain has become almost routine in some institutions and is particularly indicated where the use of morphine and similar drugs is undesirable because of the side effects produced, or where it is desired not to depress the patient. The administration of procaine intravenously in a dose of 200 to 500 mgm., towards the end of an operation, frequently makes any further postoperative sedation unnecessary. Similar doses of procaine have been used to provide relief of pain lasting for some hours in patients suffering from intractable pain in malignancy.

Following the lead of other workers we have used intravenous procaine to relieve the pain in osteoarthritis and shoulder-hand syndrome. In these cases however, in addition to the relief of pain, one expects to obtain added advantages through the relief of oedema by inhibition of the sympathetic activity, and in this manner to influence the course of the patient's disease or present disability.

Aside from the indication for the relief of pain, the majority of clinical uses of procaine given by an intravenous route are based on the power of this drug to reduce the irritability of the sympathetic nervous system or to produce a partial blockade of the sympathetic system. We thus come to use it in many cases where a block of the sympathetic nervous system with local anaesthetic drugs applied directly to the nervous pathways might otherwise be used. It has proved very useful in the treatment of post-operative or post-traumatic reflex oedema. I have used it since 1942 in the treatment of urticaria with very gratifying results. It is useful in the relief of pain and to improve circulation in peripheral vascular disease. It is widely used in controlling the sympathetic mimetic effect of cyclopropane on the heart and most of us have used it in conjunction with this agent to abolish the cardiac irregularities seen during its administration. It has been useful in controlling intractable hiccough, herpes zoster, and pruritus ani.

Following the encouraging results which we have obtained in the treatment of keloid scars

by blocking of the sympathetic nervous system with local anaesthetic, we have used intravenous procaine in several patients in which the keloid was too diffuse and widespread to be suitable for block therapy. In these the results have been very encouraging, with cessation of irritation and regression of keloids.

As a total anaesthetic agent, I think it is generally conceded that intravenous procaine is seldom, if ever, indicated. It has however, proved to be a useful adjunct to other agents, and particularly so when used in conjunction with intravenous barbiturates such as pentothal with or without the addition of gaseous agents. In this regard, I would like to pay tribute to the work of Dr. Russell Fraser of Hamilton, who has a very wide experience with this type of mixed anaesthesia.

Although much more could be said of the present uses of procaine given by the intravenous route, I believe that it will be obvious from this outline that we have here a useful method of therapy, the indications for which have as yet hardly been explored.

Several methods of administration have been employed. The most widely used method is undoubtedly the infusion by slow drip of dilute solutions of the drug, in saline or glucose, the concentration varying from 0.1% for the production of analgesia or for pruritus, and the inhibition of sympathetic function, to 1% or even greater concentration injected slowly by a syringe method. The important factor, of course, is the total dose given in relation to time, the higher dilutions having the advantage of a greater margin of safety, while the more concentrated solutions, though lacking this advantage, have in turn the advantage of allowing the rapid introduction of an optimum therapeutic dose. Some workers have employed the small uniform dose for all patients, others have employed doses based on the weight of the patient given over a specified time, and yet others give what they consider to be an adequate dose for the purpose in mind, controlling the rate of injection by the appearance of signs of over-dosage in the patient. Observation of these various methods would suggest that the end results are much the same no matter what method of injection is employed.

## THE CHANGING STATUS OF INDUSTRIAL MEDICINE\*

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ONE of the most significant trends in our post-war industrial development is a growing recognition on the part of management of the importance of health supervision in maintaining production and increasing efficiency. Industry is looking to the medical profession for guidance in this field.

Only a few years ago, the concept of industrial medicine held by employer, employee and the medical profession was that of an accident and first aid service or a therapeutic service set up to reduce accident costs by on-the-job treatment and to protect industry from litigation. General health supervision was not considered to be within the scope of industrial medicine.

Subsequent developments in the field of clinical and preventive medicine have demonstrated to the satisfaction of management that certain types of illness can be prevented, environmental hazards eliminated and the general level of health raised with a resultant beneficial effect on production. This fact, together with changing social and economic conditions in general, has placed emphasis on the need for health supervision services among employed groups.

Certain industrial leaders have expressed the conviction that health maintenance is a legitimate operating expense quite comparable to the expense of equipment maintenance. Co-incident with this changing attitude of management regarding the rôle of the physician in industry has been a changing attitude on the part of labour. Organized labour has shown an increasing appreciation of the need for health supervision and is actually demanding such services in an attempt to achieve improved working conditions. Labour has, to some extent, realized that only through the application of the principles of preventive medicine can the physical, mental and environmental status of working people be improved successfully.

To a limited extent, the medical profession has recognized in this an unparalleled opportunity for the practice of preventive medicine as applied to adult groups. However, that this opportunity has not been appreciated fully is evidenced by the fact that medical students are graduating and physicians even entering industry still regarding industrial medicine as synonymous with traumatic surgery. This is evidence of the fact that undergraduate training in this field is inadequate. Over one-half of all employees in industry work in groups of 250 or fewer. If health services are to be provided for these workers they must be undertaken largely by physicians on a part-time basis. These physicians are usually not in a position to undertake special post-graduate training and therefore require more comprehensive training at the undergraduate level.

The change in status in industrial medicine in relation to organized medicine, management and labour has to a major degree paralleled the change in concept of the objectives and scope of health services in general. It reflects the ability, the integrity and the contribution made to public health by those who have pioneered in the field of adult health supervision. Industrial medicine now plays a vital rôle in the economy of any industrial community and performs an essential public health service among employed groups.

Organized medicine has, within recent years, made recommendations with respect to the scope, objectives and methods to be employed in industrial health services. The council on Industrial Health of the American Medical Association under a general statement of medical relationships in industry outlined these as follows:<sup>1</sup> (1) Medical and surgical care to accomplish prompt restoration to health and earning capacity following industrial accident or disease. (2) Prevention of disease or injury in industry by the establishment of proper control over industrial environment. (3) Education of employees about healthful living, both in and out of the industrial environment.

In the same year a special committee set up by the council of the British Medical Association defined the duties of the industrial medical officer,<sup>2</sup> whether he be whole or part-time, as follows: (1) Medical supervision of employees during working hours. (2) Super-

\* Read at the Seventy-ninth Annual Meeting of the Canadian Medical Association, Section of Industrial Medicine, Toronto, June 25, 1948.

vision of general working conditions. (3) Organization and supervision of accident service including rehabilitation. (4) Study of specific occupational hazards and preventive measures for their control.

In 1942 the Committee on Industrial Medicine of the Canadian Medical Association in a report entitled "Scope and Methods of Work in Industrial Medicine"<sup>3</sup> summarized clearly the responsibility of the medical profession to provide health supervision services. This report was approved by general council and indicates clearly the clinical and preventive opportunities and the administrative responsibilities of the physician in industry.

A study of these three official statements leads one to the conclusion that the approach to adult health problems lies in the direction of (1) early diagnosis of, actual or incipient, disease or defect followed by suitable advice; (2) health education directed to the development of good health habits; (3) supervision of conditions of work; (4) provision of emergency treatment facilities; (5) rehabilitation.

Let us consider what effect this broader concept has had on the status of industrial medicine in relation to the specific aspects of health maintenance.

1. Preplacement examination. These examinations were the natural result of the introduction of compensation legislation and of sick benefit coverage. They were undertaken originally as a protection against excessive accident and sickness costs. Adequate placement and future health supervision were at the outset of secondary consideration. This type of examination often presented an unnecessary barrier to employment. With few exceptions, today, preplacement examinations have as their objectives suitable placement, protection of the applicant, protection of the group and a basis for future health supervision of the employee. They provide an opportunity for early diagnosis of disease, discovery of defect and for health education. The necessity of exclusion for reasons of health is, in many industries, limited to those conditions which produce a hazard to others. Rejection on medical grounds is, therefore, uncommon, and the preplacement examination is converted to a valuable health measure. This altered objective of the preplacement examination has given labour confidence in this procedure, even to the point where a health history

taken at the time of preplacement examination is of real value. Active concealment on the part of the applicant is becoming less common even in relation to such conditions as epilepsy, tuberculosis and venereal disease.

To be of value as a health activity, the preplacement examination must be comprehensive. The introduction of such a preplacement examination has changed the status of industrial medicine in the eyes of labour, management and the medical profession, since it offers a positive approach to health.

2. Periodic examination. The periodic examination properly carried out and clearly interpreted has long been recognized as an important method of supervising health. Actually, it is one of the few methods applicable to adult groups. Periodic examinations provide an opportunity for early diagnosis and advice, or, reassurance in the absence of defect. It makes possible a clinical assessment of the effects of environmental factors on health, and medical control of accident and occupational disease. Like preplacement examinations, periodic examinations were originally undertaken to protect industry from excessive sickness or accident costs often at the expense of the individual employee, and as such were of little value as a health measure.

Periodic examinations are most effective when made available on a voluntary basis. Examinations which are undertaken without the active co-operation of the individual are of greatly reduced value due to the fact that the history is apt to be incomplete or inaccurate. Still more important, if an element of compulsion exists, the advice given following the examination is less apt to be heeded.

Periodic examinations in industry have as their objective the protection of health and safety of the group or the public and maintenance of the health of the individual. If compulsory periodic examinations are indicated, where a failure of the health of the individual may affect the health or safety of the group, such examinations should be made a condition of employment. Voluntary periodic health examinations with participation stimulated on an educational basis are most effective, since these carry with them the motivation to accept and act upon the advice given.

To be of value to the individual and thus to industry, these examinations must be com-

hensive. This enables the physician to make recommendations regarding further investigation where necessary, regarding treatment or correction of defects, or to reassure the patient in the absence of defects. The cost of such examinations, however, must be within the range of sensible industrial health budgets. There is no justification for exhaustive clinical and laboratory studies of the individual, in the absence of specific indications pointing to the need for such procedures. Such examinations are costly and certainly unjustified if undertaken for the few at the expense of the group.

The use of the voluntary periodic examination as a health maintenance measure within industry has had a good deal to do with the changing status of industrial medicine in relation to labour and management. From the professional viewpoint this activity has pointed up the need for expert clinicians within industry, clinicians who can bridge successfully the gap between clinical and preventive medicine.

3. Advice on health problems. The opportunity for employees to report minor complaints of ill health for investigation and advice provides further opportunity for early diagnosis and health education. The use of well-trained clinicians for this work has changed the status of the physician in industry to the point where he fills an important rôle as a health counsellor. Industry takes the physician to the patient an important public health principal.

4. Health education. Industrial medicine is contributing materially to the objective of all health educators which is to create a healthy interest in health. Health education has been undertaken in many ways. It is probably true that the industrial physician has found his greatest opportunity in this respect in individual health instruction given in relation to clinical findings.

5. Conditions of work. Industrial medicine has pointed the way to continued improvement of working conditions. Outstanding are its accomplishments in the field of sanitation, physiological hygiene and elimination of occupational hazards. In the field of mental health and human relations industrial medicine has not taken advantage of the opportunity made available to it through its position of neutrality, its professional status and its

knowledge of human behaviour. For example, medicine has failed to emphasize the ill effects on health of authoritarian supervision in a society demanding leadership through participation. Job dissatisfaction is an occupational disease producing ill health and lowered efficiency probably more common than any of those covered by compensation legislation. Medicine has been loath to concern itself with those psychological conditions of work which lead to frustration, anxiety, undue pressure and fear, with the result that much unnecessary ill-health and inefficiency is produced.

6. Treatment. Industrial medicine quite probably has limited its scope of therapy to the treatment of industrial accident and occupational disease and to emergency measures for non-occupational conditions directed to keeping the employee on the job. Insistence on the part of the compensation commissions and the physician in industry that the sick or injured employee have free choice of physician has tended to promote the confidence of the employee in health services. This principle has also done much to promote co-operation between the practising physician and the physician in industry.

7. Rehabilitation. Early and safe return to work of the sick or injured employee is an important objective both of the physician in industry and of the attending physician. Modern clinical teaching in surgery, internal medicine, and psychiatry emphasizes the importance of early return to activity as a therapeutic measure. Satisfactory rehabilitation can only be accomplished where the attending physician appreciates the health and economic benefits to be derived from early return to work. The practising physician has the responsibility to initiate the rehabilitation of the sick or injured employee to normal or graduated activity. No industrial physician wants the employee to return to work which is beyond his physical capacity. However, much unnecessary time is lost and often irreparable damage to health is done, through lack of attention to this important problem. That early rehabilitation is not being encouraged adequately is evidenced by the fact that a large public utility company reports an average lost time of 59 days per case of acute appendicitis in a group of employees who are required to undertake only sedentary work. The use of part-time

work and disability assignments in the rehabilitation of employees could be much more widely used than it is today. The industrial physician, knowing the requirements of the job, is in a favourable position to be of assistance in this regard. The advantages of early rehabilitation to any industrial community are measured in terms of economy as well as health.

The foregoing indicates that the status of industrial medicine has been changed largely by the change in concept of the scope and objectives of health services. The status has also been changed by the recognition of the fact that the objectives cannot be attained in the absence of most capable and well trained clinicians who are prepared to use their clinical skills in the interest of health maintenance.

An important factor in this changing status has been the recognition on the part of the physician in industry that his job is purely advisory, with executive responsibility limited entirely to the administration of his own department. If this fact is recognized the physician in industry can maintain his professional status and establish his neutrality. The qualified industrial physician, irrespective of his official professional charter, has long since realized that the opportunity for useful health supervision is made available only by a high standard of clinical medicine, proved neutrality and normal physician-patient relationships. Management-dominated, or labour-dominated medicine, has no place in industry if health supervision is the objective. To maintain this neutrality line authority must be avoided and advice given only in relation to professional training and experience. This is a sacred trust.

The industrial physician recognizes a responsibility to labour, that of raising the general level of health of employees and of assisting in the development of improved working conditions. The industrial physician recognizes a responsibility to management that of raising the general health level of employees and supervision and of assisting in the development of improved working conditions from a physiological and psychological point of view. There is no conflict in these objectives. These objectives are of necessity synonymous; since in no other way can medicine contribute to improved health, increased efficiency and improved human relations.

In its brief span industrial medicine has made great strides. Health services are now available to large numbers of workers. Industry is looking to the medical profession for leadership in the field of health maintenance. To meet this challenge important opportunities lie in the direction of still closer co-ordination of clinical and industrial health services at the teaching and at the practice level. The responsibility for further progress in this direction does not rest entirely with the physician in industry.

#### REFERENCES

1. Industrial Health, A General Statement of Medical Relationships in Industry, Council on Industrial Health, *J. Am. M. Ass.*, 114: 573, 1940.
2. Special Committee—Medical Supervision of Industrial Workers, *Brit. M. J.*, 2: 783, 1941.
3. Report of the Committee on Industrial Medicine, *Canad. M. A. J.*, 47: 24, (Supp.), 1942.

### THE SIGNIFICANCE AND MANAGEMENT OF FIBROMYOMATA COMPLICATING PREGNANCY\*

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THE association of fibromyomata with pregnancy while of rather uncommon occurrence is of importance to obstetricians because of the serious consequences which may result. The incidence of fibroids in pregnancy, generally given as about 1%, is difficult to compute from hospital case reports as many of the smaller tumours go unrecorded. It was believed that a review of a series from private practice might be of interest in that the advantages of continuity of observation and prolonged follow-up examination would be obtained. It was hoped that such a study might disclose in some measure the significance of the smaller tumours and their subsequent fate. Accordingly, all cases of myomata in pregnancy occurring in my practice from January 1, 1936 to June 1, 1948 have been reviewed. Only patients in whom the diagnosis was confirmed by repeated observations are included.

In this period of time our office records show that 1,834 obstetric patients were examined, either personal or consultation cases. Those who were seen too briefly to prove or exclude the presence of a myoma were omitted entirely.

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There was a total of 87 patients with definite myomata, an incidence of 4.7%. The inclusion of referred cases and the presence of a relatively large number of elderly primiparae in the practice probably accounts for this high figure. It should also be explained that the percentage represents the incidence of myomata in obstetrical patients, not in the number of pregnancies. As might be expected, approximately two-thirds of the group were primiparae, generally in the fourth decade of life. It has been stated that the great majority of pregnant women with small myomata pass uneventfully through the antenatal period, labour and the puerperium. This may be so in many instances, but an analysis of my patients, many of whom had small

when examined from the eighth to the twelfth week of pregnancy, may suggest the diagnosis of a myoma where none is present. On the other hand, even comparatively large tumours may escape recognition antepartum if they become flattened or grow towards the uterine cavity. The somewhat ludicrous error of mistaking a large incarcerated fibroid for a fetal head has occurred to my knowledge. With multiple tumours of some size the difficulty may be the diagnosis of the pregnancy. Because of the undoubtedly relationship of myomata to abortion, the possibility of a submucous fibroid being the unrecognized factor in the woman who repeatedly aborts should be remembered. Such hidden tumours may be discovered by later curettage or hysterosalpingography.

Often the size of a tumour is underestimated during pregnancy. This is well illustrated by the following case report:

TABLE I. INCIDENCE OF FIBROMYOMATA IN PREGNANCY	
Number of obstetrical patients.....	1,834
Number of patients with myomata.....	87
Primiparae.....	56
Multiparae.....	31
Incidence of myomata in 1,834 patients.....	4.7%
<i>Age distribution:</i>	
Average age of primiparae.....	33
Youngest primipara.....	21
Oldest primipara.....	43
Average age of multiparae.....	39
Youngest multipara.....	24
Oldest multipara.....	43

tumours, showed a number of complications considerably in excess of those to be expected in a like number of obstetric patients of the same age period without myomata.

The significance or clinical importance of fibroids is often a matter of individual opinion. Probably, as Polak observed many years ago, the location of the tumour is the important factor in determining its effect upon a particular pregnancy. It might be considered that, regardless of its size, a myoma would be significant if it were responsible for any of the following complications: abortion, symptoms from degenerative changes during pregnancy or the puerperium, premature labour, obstruction of the birth canal, abnormalities of the third stage of labour or puerperal infection.

**Diagnosis.**—The diagnosis of myomata in the pregnant uterus is not always as simple as might be expected. Duckering has stated that they are most easily detected when the uterus is nearest its non-pregnant state, that is, in early pregnancy or during the puerperium. While this is generally true, it has been my observation that the irregularity or asymmetry of the uterus,

#### CASE 1

Mrs. D.J., aged 36, was first seen in the third month of her second pregnancy. No definite myoma was noted on pelvic examination. Her first child had been delivered in another city two years previously after a long labour. On examination in the seventh month a myoma was found in the upper portion of the lower uterine segment. It appeared superficial, of about 4 to 5 cm. in diameter, and was not considered to be of importance as a cause for dystocia. However as term approached the child was lying transversely and this malpresentation could not be corrected by abdominal manipulation. Accordingly delivery by Cæsarean section was chosen. At operation a myoma 12 cm. in diameter was found occupying the greater part of the lower uterine segment and extending inwardly to a considerable depth. A classical section followed by hysterectomy was performed. Even when this uterus was under direct observation the actual size of the tumour was not apparent.

The complication most frequently encountered during pregnancy is degeneration or necrobiosis. This commonly occurs in the second trimester but may come on later or in the puerperium. The symptom-complex of pain, localized tenderness, low grade fever and nausea is well known. Degeneration seems just as likely to occur in small myomata as in large ones. Several explanations have been given for its pathogenesis, but it probably results from the relatively few nutrient arteries to myomata aggravated by such factors as the rapid enlargement and increased mobility of the tumours during pregnancy. As established by Fletcher Shaw, thrombosis of the blood vessels in myomata often occurs. R. E. Campbell found definite evidences of degeneration in 75% of all myomata removed at operation during pregnancy, and a similar frequency has been present in those examined at the Van-

couver General Hospital. It would seem that subjective symptoms do not necessarily follow. Fortunately, and most usually, the condition responds readily to conservative treatment and surgical interference is rarely indicated. Myomectomy during pregnancy is an undesirable procedure and should be reserved for patients with urgent symptoms. Severe necrobiosis in a large myoma, or torsion of a pedunculated tumour may necessitate surgical intervention. Very rarely the fibroids may be of such size that the resultant increasing discomfort from pressure and abdominal distension may demand operation. Every effort should be made to temporize until the later weeks of pregnancy, in the interests of the child. Apart from the ever-present risk of causing an abortion or premature labour by myomectomy, certain operative complications may call for the sacrifice of the pregnancy at the time. Both Watson and Buckell have reported instances of myomectomy during pregnancy where the associated bleeding could be controlled only by emptying the uterus. The following case history illustrates another technical difficulty which may be encountered.

## CASE 2

Mrs. W., a primigravida aged 31, was referred because of large myomata which were causing her considerable discomfort. When first seen she was 21 weeks' pregnant. Two large tumours were palpable at the periphery of the uterus in the upper segment. These seemed to be pedunculated and the larger one was definitely tender. Rest in bed and expectancy were advised. Two weeks later, however, the pain and tenderness were more severe and there was increasing abdominal discomfort with associated nausea and vomiting. It was believed that the larger myoma was undergoing necrosis, possibly as a result of partial torsion. The indication for myomectomy seemed definite. At operation the larger fibroid was seen to arise from the right lateral wall of the uterine body by a broad pedicle so that it was almost sessile. Its dimensions were 15 x 12 x 10 cm, and an area of necrosis was present on its surface. An ovoid incision was made around its base and the tumour easily removed with little bleeding. However the uterine wall was so tense that it was found impossible to suture this large wound adequately. Accordingly, with regret and some chagrin, a hysterotomy was done following the technique of a low Cæsarean section. The myomectomy wound could then be easily approximated and the other large myoma was excised. Fortunately this patient became pregnant again within a year and was delivered of a healthy, full term infant.

E. F. Anderson experienced similar difficulty in suturing a myomectomy wound in one of his cases. Though the membranes were not exposed and the wound finally closed, his patient aborted on the first day following operation.

It was interesting to observe that several women with symptoms of degenerative changes in their first pregnancy had no trouble in sub-

sequent gestations, nor were the myomata notable thereafter. Possibly liquefaction and absorption or calcification of the affected tumours had occurred.

TABLE II.  
PREMATURE INTERRUPTION OF PREGNANCY

Threatened abortion (with continuation of pregnancy).....	11
Abortions.....	13
Previous abortions.....	37
Induced.....	5
Corrected.....	32
Threatened premature labour (with continuation).....	4
Premature labour.....	9
Hydatidiform mole.....	1
Previous ectopic pregnancy.....	1
Total number of pregnancies (87 patients).....	165
Total premature interruptions of pregnancy.....	54
Incidence of uncompleted pregnancies.....	32.7%

*Premature interruption of pregnancy.*—In the 87 patients, 13 abortions and 9 premature labours occurred. Threatened abortion or premature labour with successful continuation of the pregnancy was noted in 15 cases. Of greater significance is the fact that in the myoma group as a whole there had been 54 spontaneous premature interruptions in a total of 165 pregnancies, past or present, an incidence of 32.7%. Since some of the previous term pregnancies preceded the development of the myomata, the influence of the tumours in interfering with the normal completion of pregnancy seems unquestionable. One patient had suffered five repeated abortions due to a submucous myoma previously undiagnosed.

TABLE III.  
COMPLICATIONS OF MYOMATA IN PREGNANCY

(Premature interruption excepted)	
A. Definitely related to Myomata:	
1. Obstruction.....	4
2. Malpresentation.....	4
3. Symptoms of degeneration.....	22
B. Presumably related to Myomata:	
1. Uterine inertia.....	10
2. Premature separation of placenta.....	2
3. Abnormalities of third stage of labour.....	6
Adherent placenta.....	3
4. Puerperal infection.....	12
Slight morbidity.....	8
Febrile.....	4

That large myomata may produce dystocia by causing unfavourable presentations or by obstructing the birth passage is well-known. Many seemingly obstructing tumours will be raised out of the pelvic cavity during pregnancy or early labour and so give no trouble. Munro Kerr has emphasized the dangers of forceble

delivery past a fibroid which may be blocking the pelvis only partially. The difficulties of determining the size of the tumour and its effect on delivery have been mentioned. The patient with an obstructing myoma is usually an elderly primipara whose opportunities for further child-bearing may be seriously curtailed. When doubt exists concerning dystocia, I believe that abdominal delivery is the safer course, particularly

TABLE IV.  
METHOD OF DELIVERY IN PATIENTS WITH MYOMATA

Spontaneous.....	16
Low forceps (chiefly elective outlet forceps)....	37
Mid forceps.....	3
Breech.....	3
Unknown (delivered elsewhere).....	2
Cæsarean section.....	13
*Cæsarean alone.....	5
Cæsarean and myomectomy.....	4
Cæsarean hysterectomy.....	4
Incidence of Cæsarean section.....	18%
Cæsarean section due to myomata.....	12.5%

\*In 3 of these, indications for section were unrelated to the myomata.

TABLE V.  
INDICATIONS FOR CÆSAREAN SECTION

A. Related to myomata:	
Dystocia due to myoma (obstructing).....	4
Uterine inertia with large myomata.....	1
Elderly primipara with large myomata.....	2
Elderly primipara—previous multiple myomectomy	1
Previous hysterotomy and myomectomy.....	1
B. Unrelated to myomata:	
Elderly primipara with contracted pelvis.....	2
Elderly primipara with toxæmia.....	1
Previous amputation of cervix—premature rupture of membranes.....	1

if engagement of the head does not occur promptly after a short trial labour.

*Type of delivery.*—From Table IV it will be seen that there was a low incidence of spontaneous deliveries. However most of the low forceps operations were elective procedures consisting of simple outlet forceps. It was not believed that the presence of myomata contributed materially to the difficulties of vaginal delivery (see Table III). Uterine inertia was present in 10 cases but in a group of primiparous patients of this age inertia might be seen not infrequently in any event. The third stage of labour was abnormal in six patients, three of whom required manual removal of the placenta. This number seemed high relative to the number of deliveries.

The incidence of Cæsarean section was 18% but in only 9 cases (12.5%) were the myomata responsible for the section, either directly or indirectly. The indications for operation are given in Table V. Details of the Cæsarean section cases are given in Table VI.

At Cæsarean section the important question of the proper surgical management of the myomata makes an urgent demand on the judgment and experience of the obstetrician. While each case must be evaluated on its own merits certain principles may be mentioned. Pedunculated tumours and superficial or sessile ones may be safely removed by myomectomy. Patients with large multiple or obstructing myomata are most

TABLE VI.  
CÆSAREAN SECTIONS IN PATIENTS WITH MYOMATA

Case No.	Age	Para.	Indications	Type	Puerperium	Result
1	35	0	Previous multiple myomectomy	Low cervical	Febrile (bronchitis)	Well
2	43	0	Elderly primipara—large myoma	Low cervical-myomectomy	Afebrile	Well
3	31	0	Contracted pelvis	Low cervical-myomectomy	Afebrile	Well
4	35	0	Obstructing myoma	Classical-myomectomy	Febrile (thrombophlebitis)	Well
5	36	0	Previous amputation of cervix.	Classical	Afebrile	Well
			Premature rupture of membranes			
6	38	0	Contracted pelvis	Low cervical-myomectomy	Slight morbidity	Well
*7	36	0	Elderly primipara—large myoma	Classical-hysterectomy	Afebrile	Well
*8	36	0	Obstructing myoma, mitral stenosis	Low cervical	Afebrile	Well
9	32	0	Previous myomectomy and hysterotomy	Low cervical	Afebrile	Well
10	38	0	Toxæmia—Contracted pelvis	Low cervical	Afebrile	Well
11	37	0	Elderly primipara. Uterine inertia.	Low cervical-hysterectomy	Afebrile	Well
			Multiple myomata.			
12	36	i	Transverse presentation, obstructing myoma	Classical-hysterectomy	Afebrile	Well
13	35	0	Obstructing myoma	Low cervical-hysterectomy	Afebrile	Well

\*Consultation cases, not delivered personally.

satisfactorily treated by hysterectomy. At the Vancouver General Hospital hysterectomy has shown a definite advantage over myomectomy or Cæsarean section alone, from the standpoint of morbidity. The smoothness of the convalescence after the removal of the uterus is most impressive. No tumours remain to become degenerated or infected. It has the further advantage of eliminating the possibility of other fibroids developing later. In the multipara the benefits of hysterectomy are obvious.

The greatest difficulty of decision lies in the case of the young woman with one or two deeply placed tumours of moderate size. While the modern technique of myomectomy together with the availability of blood transfusion and specific antibiotics have greatly reduced the risk of this operation at term, the possibility of serious haemorrhage or infection can not be entirely eliminated. On most occasions I believe that the operator of limited experience is well advised not to disturb these deeply situated interstitial tumours, even though their removal at a later time may prove necessary. As a corollary it would seem evident that the indications for Cæsarean section in the younger patients should be on a really sound basis.

In Cæsarean section for myomata generally, matched blood should be ready for immediate use if necessary. The blood loss at operation is materially lessened by the use of spinal or local anaesthesia and the intravenous administration of ergotrate following delivery.

**Puerperium.**—Morbidity was present in 12 patients in the series. In 8 cases this was of low grade and without importance, and in only one of the remainder could the fever be ascribed directly to the presence of fibroids. This patient's case history is of particular interest inasmuch as she ran practically the whole gamut of complications.

#### CASE 3

Mrs. A.C., aged 40, was first seen in the eleventh week of her second pregnancy with symptoms of intermittent vaginal bleeding, nausea and vomiting and difficulty in urination. Her first child had been delivered spontaneously ten years before following a normal pregnancy and labour. On examination a retroverted gravid uterus containing several sizable myomata was found, apparently incarcerated in the pelvis with one fibroid projecting just above the brim. She was admitted to hospital. The vomiting was soon controlled by sedation and intravenous glucose therapy and the symptoms of a threatened abortion subsided promptly. The foot of the bed was elevated and she was taught to assume the knee-chest position several times daily. Reposition of the uterus did not take place following these measures, but was successfully accomplished by manipulation per rectum with the patient in the knee-

chest position aided by traction on the cervix. The pregnancy then continued uneventful except for mild symptoms of degeneration in the fifth month. Labour came on spontaneously at term. By this time the myomata were well above the pelvis and the fetal head was engaging. There was some inertia in the latter part of labour but the delivery was spontaneous. The placental stage was prolonged and accompanied by a moderate postpartum haemorrhage (700 c.c.). This blood loss was promptly replaced by transfusion. The puerperium was complicated by a fever of moderate grade due first to an endometritis and later to degeneration in one of the myomata, thus causing the patient to remain in hospital for three weeks. Involution of the uterus was extremely slow. When examined four months postpartum the uterus was still irregularly enlarged to the size of a three months' pregnancy and was studded with many myomata of varying size. The patient had no symptoms. She was advised of the probable need for hysterectomy later. However she did not return thereafter, possibly reasoning that she had already experienced too much grief during our association.

This was one of my early cases who probably suffered as a result of over-conservative treatment. In retrospect it seems that delivery by Cæsarean section followed by hysterectomy would have been preferable at her age.

TABLE VII.  
SURGICAL PROCEDURES APART FROM CÆSAREAN SECTION

Cases with previous myomectomy.....	7
Myomectomy during pregnancy.....	2
Hysterectomy during pregnancy.....	1
Subsequent myomectomy.....	2
Subsequent hysterectomy.....	8

**Subsequent history.**—A large majority of the women in this series have been under observation for some years. In most of them the tumours involuted satisfactorily often to negligible proportions. Only two patients gave evidences of degenerative changes following delivery and these responded promptly to conservative measures. However 10 patients have required operative treatment at a later time, some after a lapse of several years. The surgical procedures have consisted of myomectomy in 2 cases, one *per vaginam*, and hysterectomy in 8. Some of these patients had most insignificant tumours during their last preceding pregnancy. The after-treatment of the parturient woman with fibroids can be along expectant lines with the indications for operation being on the same basis as for fibromyomata in general. Periodic pelvic examination in order to watch the progress of the tumours should be undertaken at regular intervals.

#### CONCLUSIONS

1. The incidence of fibromyomata in a series of private obstetrical patients was 4.7%.
2. There is an increased frequency of complications even when the tumours are not large or obstructing.

3. Symptoms caused by degenerative changes in the myomata are common, but usually subside promptly under conservative treatment. Myomectomy during pregnancy should be avoided if at all possible.

4. There is a definite tendency for premature interruption of pregnancy. Accordingly an increased amount of rest with avoidance of undue exertion is to be recommended.

5. A high percentage of patients with large or multiple tumours will require delivery by Cæsarean section and the advantages of Cæsarean hysterectomy in the older and multiparous patients are noted.

6. The after-treatment may be expectant with the same indications for surgical interference as for myomata generally.

#### BIBLIOGRAPHY

1. ANDERSON, E. F.: *West. J. Surg., Obst. & Gyn.*, 55: 273, 1947.
2. BONNEY, V.: *The Technical Minutiæ of Extended Myomectomy and Ovarian Cystectomy*, Cassell & Co., London, 1946.
3. BUCKELL, E. W. C.: *J. Obst. & Gyn. Brit. Emp.*, 54: 70, 1947.
4. CAMPBELL, R. E.: *Am. J. Obst. & Gyn.*, 26: 1, 1933.
5. DUCKERING, F. A.: *Am. J. Obst. & Gyn.*, 51: 819, 1946.
6. MUNRO KERR, J. M.: *Operative Obstetrics*, Wm. Wood & Co., Baltimore, 1937.
7. ADAIR: *Obstetrics and Gynaecology*, Lea & Febiger, Philadelphia, Vol. 2, Chap. XII, 1940.
8. POLAK, J. O.: *Surg., Gyn. & Obst.*, 46: 21, 1928.
9. SHAW, W. F.: *J. Obst. & Gyn. Brit. Emp.*, 23: 129, 1913.
10. STANDER, H. J.: *Textbook of Obstetrics*, Appleton-Century Co., New York, 1945.
11. WATSON, B. P.: *Am. J. Obst. & Gyn.*, 23: 351, 1932.

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### MEDICAL PROBLEMS IN FITTING MODERN HEARING AIDS

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MODERN hearing aids with vacuum tube amplification are of a very great benefit to many hard-of-hearing patients, provided they are fitted properly. In certain types of deafness it is quite possible to do actual damage to the patient's hearing function by the use of such a hearing aid. For this reason the fitting of hearing aids should be the function of the otologists. A hearing aid can only be fitted properly and safely after a complete medical examination of the ear, nose and throat, a complete anamnesis and a full use of tuning forks, monochord (Struycken), a.s.o. The audiogram, too, is very important and necessary for a complete diagnosis, but it is of relatively little value in fitting hearing aids.

"Mirroring" of the audiogram in fitting hearing aids gives poor, and, in many cases absolutely wrong results, as is well known today. A short description of some technical details is necessary in order to be able to judge their possibilities. It is good to realize beforehand that a hearing aid has always certain shortcomings; it can never replace damaged hair-cells of the cochlea or other vital defective parts of the ear proper. On the other hand, a hearing aid must restore to the patient a sociable, practical and serviceable hearing capacity, without damaging his own hearing function.

Modern hearing aids are amplifiers with three or four vacuum tubes. The differences between the models of leading manufacturers are very slight. To minimize the distortion the circuits may be different. Some have a feed-back; others a balance circuit. American hearing aids are accepted by the Council on Physical Medicine of the American Medical Association. This is a valuable certificate for reliability and service. An important feature is the so-called bifocal or trifocal control, which is just a switch to quickly cut down the volume. This enables the patient to hear well in noisy surroundings. Noise is a complex of mostly low frequencies, so that speech can distinctly be heard without being masked by the amplification of noise. The microphone of the transmitter is of a crystal type and enables the patient to hear from a relatively long distance.

The earphone brings us to the problem of air or bone conduction. Bone conduction is transmitted by an oscillator, applied on the mastoid bone. Modern measurements prove that a bone oscillator is too slow and does not amplify frequencies over about 2,000 cps., whereas the amplification of air-conduction receivers is practically unlimited. It is not possible to give reliable characteristics of a bone oscillator. The effect depends too much on the shape of the mastoid bone and of the pressure of the oscillator against the skull. For these reasons the application possibilities of a bone oscillator are very limited. All the important frequencies of the speech zone are included between 250 and 4,000 cps. The higher frequencies are far more important for the intelligibility of speech than the lower ones. Bone conduction fitting must thus be a very poor fitting. In about 10% of the

cases it is still prescribed, *i.e.*, in chronic suppurative otitis media or in external otitis, when the discharge of the ear or the condition of the external canal makes the fitting of an air conduction receiver inadvisable. The air conduction receiver itself is a little, smartly shaped telephone of the magnetic or crystal type, attached to an eartip of transparent plastic, called lucite. Magnetic receivers are designed for higher efficiency at the expense of a poorer consonant reproduction. Crystal receivers are usually ready-made; they have a lower efficiency with a clearer consonant reproduction.

The eartip is a very important part of the hearing aid. Five numbers are readily available in two series, one for the left ear and one for the right. As all ears are different, in the same way as fingerprints, no one eartip will fit exactly. We can only choose the eartip that proves to be the most tolerable to wear in the ear. In using a higher output of the hearing aid most earphones are subject to squeal, an acoustic feed-back. This can be prevented by making an ear impression and moulding a personally fitted eartip. Such eartips have many advantages over the standard eartips. They are agreeable to wear, and by their proper sealing prevent the acoustic feed-back. The making of a deep ear impression in plastics can easily and safely be done by the otologist, who is acquainted with the anatomical variations of the external canal, and who knows the use of plastics. This is considered safer for the patient, than when it is done by a technician who does not know the peculiarities of the external canal, and who can, therefore, easily damage the canal or the drum.

The two batteries, feeding the transmitter are: one with a high voltage of 15, 22½, 30, 33 or 45 volts, the so-called B-battery, and one of a low voltage, 1½ volts, the A-battery. The total output of a hearing aid is a function of the B-battery. The higher the voltage, the higher the output.

In using a bone oscillator a voltage of 45 is usually needed. The low voltage A-battery feeds the glow filaments of the radio bulbs. In some types of hearing aids the batteries are built in, the monopae type of hearing aids. This has the advantage that such a type of aid is more comfortable to wear as the batteries with the corresponding connecting cords are lacking. On the average, hearing aids with loose batteries have a flatter response and less distortion than

the monopae. Patients like to wear their hearing aids as invisible as possible. When they have the transmitter under their clothes, they are in many cases bothered by the scratching of their clothes on the transmitter. This "case" noise is recently largely reduced by the manufacturers of hearing aids by using a new system of mounting the microphone in the transmitter. This is a great improvement. In the newer models the operating cost is further reduced, and many of the vital parts, such as the transformer, the condenser and the resistors have been made more moisture proof. By using new types of vacuum tubes the total output of the hearing aids is high, compared to the voltage of the B-battery.

Damage to the hearing function of a patient is possible when a hearing aid is applied in cases of the recruitment type of deafness. This is a type of nerve deafness, described by Fowler.<sup>1, 2, 3</sup> In recruitment the louder tones are heard with much less hearing loss than could be expected in comparison to the soft tones. A loud tone is heard with equal or nearly equal loudness in a normal ear as in an ear with a recruitment type of deafness. Amplification of such louder tones becomes unbearable for the patient's ear and can do further irreparable damage to his hearing function. Recruitment is only found in nerve deafness; it does not occur in otosclerosis or pure senile deafness (De Bruine Altes<sup>4</sup>). This recruitment phenomenon is also responsible for the fact that patients with a middle ear type of deafness have more profit from their hearing aids than patients with nerve deafness. On the average such a recruitment does not tolerate an amplification of over 40 decibels well. To prevent possible damage to the hearing function by the use of a hearing aid the instrument must be provided with a device to protect the ear against over-amplification. The amplification must be prevented from reaching a level too high to be tolerable to the ear. This can be accomplished in two ways:

(a) By peak clipping ("limiter" or "governor"). A maximum output level can be fixed in accordance with the tolerance of the patient's ear. The energy of a pure tone is determined by its amplitude. In peak clipping the tops of the sinus curve are clipped and a more or less distorted sinus curve is left. In other words, peak clipping gives a certain degree of distortion of speech. Some types of

hearing aids are actually provided with peak clipping.

(b) By compression amplification. This gives less distortion than peak clipping. It is technically more difficult to provide wearable hearing aids with compression amplification (extra tube and condenser), but it gives better results than peak clipping. As far as I know there are no wearable aids today provided with this system of compression amplification. Patients with a recruitment type of deafness have a very narrow hearing span, i.e., the difference between the comfortable and uncomfortable loudness level expressed in decibels. When wearing a hearing aid they complain about the loudness of their own voice. The clapping of a door, the noise of typewriters, the noise of spoons and forks while eating sound very uncomfortable in their ear.

It is a very striking fact that in prescribing hearing aids in practice the best results are nearly always obtained with two or three types of hearing aids. Whatever the type of deafness may be, an aid with a flat response or with a slight emphasis of the higher frequencies yields the best results. Of the last 190 patients to whom I prescribed a hearing aid with air conduction fitting, not less than 188 got an instrument with a flat response or with a slight emphasis of the higher frequencies, although this group represented every possible type of deafness. This was an unpredictable fact, and it has very important consequences. It simplifies the fitting of hearing aids considerably. In the future only a few types of hearing aids will be necessary and that will lower the cost considerably. Selectivity of amplification seems to be superfluous. To compare the fitting of a hearing aid to the fitting of glasses is absolutely wrong for this reason alone. In fitting hearing aids there remain two factors to take special care of:

1. The condition of the outer canal, whether it can tolerate an airconduction receiver or not (eczema, otitis media chronica). In these special cases a bone oscillator is the only possible means.
2. The recruitment factor of the deafness. If this recruitment is very marked, a hearing aid with peak clipping or compression amplification is needed.

The results obtained in practice are in accordance with the investigations made by Davis and Stevens<sup>5</sup> in their acoustic laboratories with

a group of 25 patients, representing every type of deafness. Although the fitting of hearing aids is rather simple, every hard of hearing patient should be advised to see his doctor first before buying or using a modern hearing aid. This alone can prevent possible damage to his hearing function. The doctor can give him necessary advice about the condition of the outer canal and of the presence and the rate of recruitment, eventually expressed in decibels.

#### SUMMARY

In practice nearly all types of deafness can be fitted with a hearing aid emphasizing the higher frequencies or amplifying all frequencies of the speech zone uniformly. It is very important to protect ears with a recruitment type of deafness by means of peak clipping or compression amplification.

#### REFERENCES

1. FOWLER, E. P.: *Arch. Otolaryng.*, 8: 151, 1928.
2. *Idem*: *Arch. Otolaryng.*, 24: 731, 1936.
3. *Idem*: *The Laryngoscope*, 47: 289, 1946.
4. DE BRUIJNE ALTES, J. C.: Thesis, Groningen, 1946.
5. DAVIS, H. AND STEVENS, S. S.: Hearing Aids, 1947.

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#### COMMUNITY PSYCHIATRIC DEVELOPMENTS IN SASKATCHEWAN\*

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MENTAL disorder exacts a considerable toll in money and human suffering in every community, and Saskatchewan is no exception. The end results of intellectual, emotional and behaviour disorders are seen both in institutions and in the community itself. Saskatchewan has 4,500 patients in its two mental hospitals and training school for the mentally retarded. At all times its penitentiary, gaols and other places of detention contain almost 1,000 delinquents and criminals. Outside of the institutions, tens of thousands annually visit the practising physicians in the province because of emotional disorders and family problems. It is obvious to all that active measures are indicated in an effort to prevent or ameliorate these most distressing disorders.

The Department of Public Health in the Province of Saskatchewan is attempting to de-

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velop a community program dedicated to the prevention of psychiatric disability. This program has encountered certain obstacles inherent in the special features of this thinly populated, geographically extensive province. On the other hand, it has also reaped the benefit of the co-operative spirit which is characteristic of those who live on the prairies. Accordingly, it early became evident that widespread preventive measures could not be the responsibility of the Department of Public Health alone; rather it was obvious that the assistance of existing community resources must be enlisted.

Very early in the organization of the present preventive program, the practising physicians, through the College of Physicians and Surgeons of Saskatchewan, indicated their desire to participate. The co-operation and assistance of the public health nurses was sought and gained at an early date. The social workers of the Department of Social Welfare comprised an additional group whose interest coincided with the mental hygiene plans. Finally, it became evident that the school teachers of the province, because of their strategic relationship to the intellectual and emotional development of children, must be considered important allies in any program directed at improving the mental health of the community.

The first problem of developing focal points from which the assistance of these groups could be co-ordinated and directed, was solved by the decision that the community psychiatric service should centre on the existing psychiatric establishments. These three institutions, geographically widely separated, but administratively under the direction of the Department of Public Health, are the Saskatchewan Hospital, North Battleford, in the northern part of the province, and the Saskatchewan Hospital at Weyburn in the extreme southeast, with the psychiatric unit of the Regina General Hospital as the centre, located between the other two. It was decided to develop a province-wide service directed by psychiatrists travelling from each of these three centres. Therefore, in a period of three months, a beginning was made by setting up three part-time out-patient clinics and a full-time one. The part-time clinics are located in the Regional Health Units at North Battleford, Weyburn and Moose Jaw, and the full-time

clinic at the Regina General Hospital. These are considered simply as forerunners of other clinics yet to be developed in the process of giving a complete provincial coverage.

How this service should function to be most effective in the prevention of mental disorder, was the first matter to be settled. It was concluded that the efforts of the psychiatrists could most profitably be directed at the education of professional personnel resident in the community. Thus it was apparent that the burden of prevention and amelioration of mental disorder must rest with the physicians, public health nurses, social workers and teachers who comprise this resident personnel.

After early discussions with the College of Physicians and Surgeons had revealed the interest of the physicians in the psychiatric problem, policies were established in an effort to include the physicians in all psychiatric developments. The first directive was that all references to the psychiatrists carrying on this work must be made through the practising physicians. In the beginning there was some foreboding concerning the possible effect of such a practice. Fear was expressed that the physicians might not be willing to refer their patients for clinic consultation. This fear has proved groundless. To date, since the institution of this service, we have no recorded instance of such refusal on the part of any physician. On the contrary there has been enthusiastic co-operation to such an extent that our limited staff of consultants has been unable to keep up with the case load. Physicians have been invited, routinely, to all case conferences. Unfortunately, in most instances it has not been possible for them to attend; however, the referring physician receives a detailed report covering each case. In this way, it is anticipated that he will be given increased understanding and insight in the handling of the many psychiatric problems which come daily to his office.

Where health regions have been established, the regional medical health officers have played a major rôle in the development of the program. In the parts of the Province where there are no regions, the burden has fallen on the public health nurses, and to a lesser extent on the staff of the Department of Social Welfare. Since the clinics which have been organized, with the exception of the clinic at the

Regina General Hospital, have had no full-time social workers or psychologists, other personnel had to be found to carry out the duties usually assigned to these people. So far as the rôle usually played by the psychiatric social worker is concerned, this was, generally speaking, assumed by the public health nurse, and to a lesser extent by the staff of the Department of Social Welfare.

To prepare these people for such responsibility, there was set up a one-month's training course in mental hygiene at the two mental hospitals. To date, this course has been taken by over 70 public health nurses and about 15 social workers who have subsequently returned to their posts as health and welfare workers. This initial training experience is being supplemented by a continued in-service training under the direction of the psychiatrists who are conducting the community consultations.

These psychiatrically oriented public health nurses and social welfare workers have carried out, subsequent to their training period, other community psychiatric duties. These include obtaining information about patients who have been admitted to mental hospitals, pre-discharge home investigation and post-discharge follow-up of mental hospital patients. The end result of this has been a rapidly expanding social service available to the mental hospitals and the training school for the mentally retarded.

The service of the school teacher has been incorporated into the program with greater difficulty than that of the other professional personnel. This is due to the fact that the teachers are more widely distributed, and have had, as yet, less training in the significance of mental hygiene. However, their interest and co-operation are being solicited and are being gained to an increasing extent through the efforts of the public health nurse. This has been facilitated by the fact that the public health nurses are, in most areas, also school nurses. They have been encouraged to discuss classroom mental hygiene problems and policies with the teachers in their school districts.

A new agent in our attempt to educate the teacher in the principles of mental hygiene has been found in the teacher-psychologist. This is a teacher, with psychological training, who visits various classrooms and consults with the teacher, not only on specific mental hygiene

problems, but also advises concerning the maintenance of a classroom atmosphere conducive to good mental health.

During the academic year of 1947-48, a teacher-psychologist was located in the City of Weyburn and the surrounding larger school unit. His salary was the joint responsibility of the local school board, the Department of Education and the Department of Public Health. The school board in the City of Moose Jaw allocated an experienced teacher to similar duties in the Moose Jaw School District. These teacher-psychologists confer at classroom level with teachers and public health nurses on specific problem children. They also refer to the psychiatrist at the Mental Health Clinic, representative mental hygiene problems. These children, so referred, are seen by the psychiatrist, who discusses the difficulty with the parents. Subsequently, each problem is the subject of a conference conducted by the psychiatrist, with the teacher-psychologist, public health nurse and interested teachers participating. This conference shows promise as a useful avenue of approach to the goal of interesting and training the teacher in mental hygiene.

The completion of a full year of experimentation and development in the field of mental hygiene finds the program assuming definite patterns. The policy of administering the clinics from the mental hospitals and other psychiatric centres is firmly established. The active effort to include the practising physician in the project being carried out has revealed evident interest and is producing excellent co-operation. The utilization of the public health nurse, following her mental hygiene training, as a community assistant to the psychiatrist, has been an outstanding success. The experiment of employing a teacher-psychologist, in an effort to gain more quickly the assistance and understanding of the teachers, has proved very worthwhile. Our experiences convinced us that in a community such as the Province of Saskatchewan, a mental hygiene program can best be carried out as a co-operative effort between the mental hospitals and the existing professional personnel in the community.

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## PSYCHIATRIC DEVELOPMENTS IN SASKATCHEWAN—HOSPITALS\*

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THERE are two somewhat unusual features of mental hospital care in the Province of Saskatchewan which are, in our estimation, definitely a step forward. First, there is no charge for care in mental hospital. This provision is separate from the general hospitalization plan for which each individual is taxed five dollars. The advantages are that early treatment is not prevented by economic considerations and that, when a patient leaves hospital, he is not destitute as is so often the case when an enthusiastic hospital bursar has extracted the last cent of his savings in payment of maintenance.

Secondly, a free ambulance service is provided to bring the patient to hospital. This obviates the struggle en route between relatives and patient, which, owing to distance and transportation difficulties, might last several days and the public spectacle of the mentally ill individual with his peculiarities of conversation and conduct being exhibited on train or bus.

Our main interest during the past year, however, has been centred on our staff training program. Following the same reasoning as in our community organization, it was obvious that individual patient care could not be given by physicians alone. It was decided, therefore, to give the ward staff an adequate training in the medical and psychiatric aspects of patient care so that the physician would be able to function in a consultative and supervisory capacity only. In many mental hospitals in the past, the training emphasis has been on physical rather than psychiatric care with, in most instances, particular attention devoted to the training of the female nursing staff to the neglect of the male attendants. Some mental hospital administrators have considered it ideal to have the ward staff consist entirely of registered nurses. However, because of the shortage of registered nurses and the feeling that they could be used to greater advantage in other fields, we have abandoned hope of obtaining these very useful people in large numbers and intend to staff only our operating room and sick wards with them. We

do not differentiate between male and female staff and give both the same course of training.

We have just finished our first year of this new three year course of training. Naturally, there have been some features that require revision but this past year has confirmed our belief that we are on the right track and we are planning to resume the teaching program with only minor changes in the curriculum. Our instructional staff consists officially of one instructress in nursing and a Supervisor of Staff Training but we are utilizing everyone on the medical and nursing staff down to and including the ward supervisors for instructional purposes.

The most important initial task is to pick suitable candidates for this type of work. Our academic requirement is set at grade XI which is approximately the equivalent of grade XII in Ontario. We attempt by personal interview, to weed out those who are emotionally and physically unsuited to this type of work. The new students are admitted on a probationary basis and before being started on the wards are given an orientation course in which the details of the curriculum are explained to them. They receive lectures on the history of the care of the mentally ill, our hopes in this regard and their attitudes towards patients, fellow workers and administration. They are also given instruction in elementary nursing and house-keeping procedures to make them useful on the wards as soon as possible. This involves approximately fifty-five hours of formal instruction.

Our curriculum for the first year consists of Nursing 78 hours, Medicine and Surgery 41 hours and Psychiatry 50 hours, Recreational and Occupational Therapy 15 hours. The second year includes Nursing 25 hours, Medicine and Surgery 30 hours and Psychiatry 100 hours, Recreational and Occupational Therapy 10 hours. The third year consists of Nursing 25 hours, Medicine and Surgery 40 hours, Psychiatry 50 hours. For the coming year, we are making a slight modification in the first year psychiatry as this subject appears to be most foreign to the students' past experience and is most difficult for them to absorb. However, the hours devoted to this subject will be approximately the same.

These five hundred hours are periods of formal instruction but, in addition, informal instruction is given by the supervisors on the wards directed by our instructress. In the sec-

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ond and more particularly the third year, the student is assigned, for a period of two to four weeks, to parts of the hospital where special treatments are given or special instruction is obtained, such as tuberculosis ward, operating room, diet kitchen, insulin ward. In our medicine and surgery, during the first two years, an attempt is being made to teach each system of the body separately and completely under the following headings: anatomy and physiology, symptomatology of various conditions affecting this system, first aid and emergency treatment, therapy and nursing care including diet. In the third year, the instruction includes communicable diseases, public health and hygiene and covers the conditions which are not confined to systems.

Nursing instruction which includes both general and psychiatric nursing procedures, is more concentrated in the first year and becomes more specialized in the other two years.

Psychiatry in the first year is descriptive and consists of two parts, the first being the study of the reactions of the so-called normal with the development of various personality traits and the second a formal presentation of the various types of mental illness with their symptoms. The second year is analytical and an attempt is made to give the student a knowledge of the psychological and other etiological factors concerned in the development of mental illness. This instruction is given in a seminar type of course with discussion groups rather than lectures and lasts four weeks. During this period the student is taken off his regular ward work and spends several hours daily interviewing patients and relatives and learning the rudiments of history taking. We feel that this is a most important part of the psychiatry curriculum.

The one month course which is given at the hospitals for community professional personnel is a modification of our second year course in psychiatry and much of the instruction is combined.

In the third year, the causes of mental illness from a sociological and anthropological standpoint are discussed and the development of our present culture with its effect on the individual is presented. Methods of prevention and treatment are also covered in detail.

Recreational and occupational lectures in the first and second year are directed towards an

understanding of these methods of treating patients and the philosophy behind them. In addition to the formal instruction, there are periods of demonstration in which the students take an active part.

On completion of the course, the graduate will be capable of functioning in all parts of the hospital including those where specialized care is given. In addition, and this is the main purpose of the training program, he will be capable of taking a group of patients completely under his care, supervise them through a day consisting of periods of work, recreation and relaxation, will know the details of their condition and be able to discuss with them their aberrations and difficulties from a therapeutic point of view. We feel that assigning the staff member to the patient, rather than to the ward, is a very important change, as the emphasis is shifted from ward cleaning to the care and rehabilitation of the patient.

There is one other feature of our organization that differs from common practice, that is, supplying a psychiatrist from the hospital staff to work in the mental hygiene clinics. Our feeling is that we should avoid confining the psychiatrist's work either to the community or to the hospital and therefore, we hope that eventually each member of our staff will spend a day a week in clinic work and the rest of the week in the hospital itself. This should improve the individual's perspective, add to his interest in his work and thus produce a more efficient service in both spheres of activity.

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## PANCREATIC PSEUDOCYST

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SO uncommon is the occurrence of pancreatic cyst that each new case should be worthy of report. Angel<sup>1</sup> reports that from 1930 to 1938, 3,600 abdominal sections have been carried out in his hospital and pancreatic cyst was encountered only once. In the Lahey Clinic,<sup>2</sup> during the period from 1926 to 1945, only 9 cases were encountered. An extensive review of the available literature reveals only 53 new cases reported in the last decade.

**Classification.**—There are almost as many classifications of pancreatic cyst, as there are articles on the subject. The most complete would appear to be that of Robson and Cammidge<sup>3</sup> (H) with some modifications.

1. *Retention cysts*, result from obstruction of one of the smaller pancreatic ducts; are small and associated with interstitial pancreatitis (A). They have an epithelial lining.

2. *Proliferative cysts or cystadenoma*, are true pancreatic cysts lined with cuboidal epithelium. They are due to a proliferation of glandular epithelium followed by an accumulation of fluid. They may become malignant.

3. *Congenital cysts*, very uncommon. Lindau,<sup>4</sup> in a monograph on cerebellar cysts and angiomas of the retina, stated that congenital cysts of pancreas were present in over one-half of the recorded cases. He further stated that congenital cysts of the pancreas in the adult are associated almost constantly with cysts of the central nervous system.

4. *Degenerative or hemorrhagic cysts*, are secondary to necrosis with bleeding. They represent the end result of localized acute pancreatic necrosis with softening and cystic transformation of the destroyed pancreatic tissue. These occur within the substance of the gland.

5. *Hydatid cyst*.

6. *Dermoid cyst* (Judd).

7. *Pseudocyst*. These are the commonest of all. They are etiologically and morphologically similar to the degenerative cysts but occur outside the main body of pancreatic substance, usually in the lesser peritoneal sac. Also, they differ histologically from true cysts of the pancreas in that they possess an endothelial rather than an epithelial lining.

**Occurrence: age.**—From age of 11 to 77. Average 45.4 years; by far the majority are from 25 to 49 years of age. **Sex.**—There appears to be no reason why this condition should have a sex incidence and many authorities claim there is none; however, an analysis of all the cases in this series shows the condition to be twice as common in females, as in males.

**Etiology and pathogenesis.**—For years the importance of trauma in the production of pancreatic cyst has been stressed. It is hard to estimate accurately the percentage of cases in which trauma was the causative factor. Koerte<sup>5</sup> in 1911 reported on 117 cases. There was a history of abdominal injury in 53. Lahey Clinic report 9 cases with trauma in only 1. Judd of the Mayo Clinic, reports 41 cases with a history of trauma in only 1. Pinkham<sup>7</sup> of San Francisco claims that 20 to 25% have a history of trauma and haemorrhage.

Further evidence in favour of trauma as a causative agent is the experimental work of Lazarus.<sup>8</sup> He crushed the pancreas of dogs. Full report of his experiments is not available but there is a report of one dog so treated, who developed a large haematoma first. This later

became an encapsulated cyst containing 100 c.c. of milky fluid.

Of late, the rôle of inflammation has been stressed, e.g., acute and chronic pancreatitis. The big question would appear to be; What causes the pancreatitis? One theory is that a partial obstruction of the pancreatic ducts may lead to necrosis of the tissues by the pancreatic enzymes. Archibald<sup>9</sup> feels that pancreatitis may be due to bile entering the pancreatic duct. Infected bile in the pancreatic duct converts trypsinogen into trypsin which proceeds to digest the pancreas. It is a fact that in many cases of pancreatic cyst there is an associated cholecystitis and both true and false cysts may result from pancreatitis. Tilger and Dieckhoff<sup>10</sup> suggest there is fibrosis of the pancreas with resulting obstruction by constriction of the ducts with dilatation of the duct distal to the obstruction. This produces a degeneration of the acinar cells leading to necrosis of the surrounding tissues by the action of the liberated ferments, which do not require activation by bile. Boyd states that the probable truth is that all of the factors outlined above may at times be responsible for the condition.

**Diagnosis.**—According to Judd, Mattson and Mahorner<sup>12</sup> the three commonest sites of presentation are: (1) between the stomach and transverse colon, behind the gastro-colic ligament; (2) into lesser sac, between stomach and liver; (3) between the layers of the mesocolon either behind the transverse colon or beneath it.

The actual signs and symptoms will vary with the path which the cyst takes and how large it is because most of the symptoms are due to pressure on the neighbouring organs.

**Symptoms:** (1) *pain*.—This is the most uniform symptom of all and was a complaint in almost every diagnosed case. Usually the pain is in the right hypochondrium and epigastrium. It may be diffuse. It may or may not be referred to the back. It may vary in intensity from a dull ache to a severe pain requiring sedation. The character of the pain is continuous, has no relation to food, and may be relieved by assuming a bent or huddled position. In other words, the pain is not specific but there is pain and this is the symptom which most frequently leads the patient to consult his doctor. (2) *Pressure on neighbouring organs*.—The commonest organ to be affected is the

stomach. Symptoms may vary from anorexia or epigastric discomfort after meals to full grown obstruction. The case we are reporting actually presented a picture of almost complete obstruction.

**Signs.**—The only physical finding of importance is an abdominal mass and this, of course, is not always found. The characteristic site for it is above the umbilicus in the left hypochondrium. The x-ray is a major aid in diagnosis. The exact picture of course varies with the position and size of the cyst. An enlarged duodenal loop and evidence of an extrinsic filling defect of the pyloric portion of the stomach, strongly suggests a cyst of the head of the pancreas. If the tumour is in the tail of the pancreas the greater curvature of the stomach shows an extrinsic filling defect when the patient lies down which disappears when he stands up. There is much more to be said for the roentgenological diagnosis of pancreatic cyst but this article is not the place for it. Laboratory investigation seems to be of no aid in the diagnosis of the condition.

#### TREATMENT

**1. External drainage—marsupialization.**—The classic treatment of pancreatic cyst is marsupialization with evacuation of the necrotic debris contained in the cavity, first described by Gussenbauer in 1883. This was the generally accepted treatment until the last decade. Unfortunately, in some instances, this led to a very persistent sinus and some are reported in the literature as having drained as long as fifteen years (Kerr<sup>13</sup>). A second complication is excoriation of the skin by the draining fluids. A third complication is infection of the cyst and sinus and the formation of a secondary abscess. Prior to the last decade much work was being done on methods of eradicating this sinus. Culler<sup>14</sup> advocated radiation of the sinus tract. Hamilton<sup>15</sup> used radium insertion. Others attempted to destroy the lining membrane of the cyst by mechanical or chemical means. Into this group falls the work of Schwyzer<sup>16</sup> who applied tincture of iodine to the interior of the cyst. Gordin<sup>17</sup> used a sclerosing agent to destroy the membrane of the cyst.

**2. Internal drainage.**—In an attempt to avoid the unpleasant complication of a chronic discharging sinus intrepid surgeons devised means

of internal drainage of these cysts, by anastomosing the cyst wall to some part of the gastrointestinal tract. This was first done by Jedlicka<sup>18</sup> in 1921. His anastomosis was with the stomach. Jurasz<sup>19</sup> took up the work and described his first case in 1931. Hahn<sup>20</sup> in 1927 described a case in which he did a cysto-jejunostomy. Chesterman<sup>21</sup> popularized this type of anastomosis in 1941. Kerschner<sup>22</sup> in 1935 did a cysto-duodenostomy.

The literature is full of controversy as to which type of anastomosis is best. Some surgeons objected to the anastomosis of the cyst to any part of the gastrointestinal tract in the belief that the intestinal content might enter and activate the enzymes in the true pancreatic cyst. Because of this theory, Walzel<sup>23</sup> anastomosed the cyst to the gallbladder, depending on the absorptive power of the gallbladder. He even ligated the cystic duct to prevent a reflux contamination. This operation has never become popular and a group consisting of Brozq and Aboulker<sup>24</sup> have shown experimentally that direct anastomosis between pancreatic canals and the stomach or intestine does not produce any lesions of the pancreas. Actually, the reports of cases treated by internal drainage show that none were ever followed by any pancreatic incident.

Regarding transgastric drainage, Altshuler and Meyers<sup>25</sup> describe one case so treated which resulted in the development of a severe pernicious anaemia, three (3) years postoperatively. Whether this is cause and effect or mere coincidence, it is hard to say. Adams of the Lahey Clinic also recommends the cysto-jejunostomy operation. His technique is to anastomose the cyst to a loop of jejunum, approximately 35 cm. from the ligament of Treitz and then do a jejun-jejunostomy of the efferent and afferent loops about 15 cm. from the ligament of Treitz. This seems to be the method of choice for internal drainage.

**3. Excision.**—Complete extirpation of the cyst is the ideal procedure. Unfortunately this is not always possible because of the intimate relationship of the cyst with surrounding structures. Other dangers are severe haemorrhage from the splenic branches to the pancreas and the danger of seriously damaging the intestinal blood supply.

Excision of the cyst was first undertaken by Bozeman<sup>26</sup> in 1882. Since then many others

followed in his path. However, it was customary to drain the bed of the excised cyst and this frequently led to the formation of a chronic sinus also. To date, the motto has been regardless of the procedure; "always drain".

In the authors' case an almost complete excision was performed and the abdomen closed without drainage. The authors thought this was probably the first time anyone had ever removed a cyst without drainage. However, one article, in the vast amount of literature, described a cyst which had been removed without any drainage. This was reported by Harrison and Cooper.<sup>27</sup> It was a case of traumatic pseudocyst in an eighteen year old boy. A log fell on him, producing fracture of several ribs, a right pneumothorax and a fractured pelvis. He was in bed for six weeks without noteworthy symptoms, other than vague chest pain and occasional haemoptysis. On leaving his bed he noticed swelling of the abdomen, which was limited to the left upper quadrant. He was admitted to Vanderbilt Hospital, where paracentesis was performed and 500 c.c. of pink clear fluid obtained. X-ray examination of the gastrointestinal tract showed the intestines to be displaced to the right and the stomach to be anterior to the mass. At operation, a huge pancreatic cyst was found, which contained 4,000 c.c. of fluid. The pancreas had been split in half. The distal half, plus the cyst, was removed and the abdomen closed without drainage. The patient made an uneventful recovery.

#### CASE REPORT

Mr. L.H., aged 37. The patient awakened on the morning of October 17, 1944, feeling perfectly well. Forty-five minutes later, while finishing his breakfast, he was suddenly stricken with severe abdominal pain, crampy in character and at times agonizing. These cramps soon shifted to the lower abdomen. A large bowel movement gave considerable relief. About an hour later the pain returned in its original severity and even increased in intensity until his admission to hospital five hours after the onset of symptoms.

On admission he was evidently in shock; cold, clammy, sweating and experiencing great pain. There was considerable epigastric tenderness as well as pronounced resistance and splinting of the epigastric musculature. There was not the board-like rigidity usually found in a perforated gastric or duodenal ulcer. Furthermore, firm palpation did not seem to increase the pain markedly. A preoperative flat plate of the abdomen did not reveal any gas under the diaphragm. However, the preoperative diagnosis was "posterior wall gastric ulcer with perforation into the lesser sac."

Laparotomy was performed four hours after admission (nine hours after the onset of symptoms). No free fluid was encountered on entering the abdomen. There was a dark, bulging mass in the lesser sac be-

tween the stomach and the transverse colon. This mass was incised and a large amount of dark, viscid fluid was evacuated. Examination of the region, after evacuation of this fluid, revealed a dark, soft and almost totally necrotic pancreas. There was no evidence of fat necrosis. The biliary system was normal. A large piece of the pancreas was removed for biopsy. The pancreas was marsupialized, then the greater omentum was sutured around a Penrose drain so as to create a fistula between the lesser sac and the surface.

The pathological report was as follows (Dr. J. W. Macgregor): Pancreatic tissue—acute necrosis.

The postoperative course was very satisfactory. The patient's temperature, pulse and general reaction were normal by the sixth day and remained so. A series of fasting blood sugars varied from 65 to 115 mgm. % indicating no diabetes mellitus. The fluid which drained from the fistulous opening was tested on several occasions and showed a diastase index of 50 units (Wohlgemuth) decreasing to 20 units. The patient was discharged on the 30th postoperative day. He had lost twelve pounds since admission. Six weeks later the fistula was completely closed. The patient's weight had returned to normal. He was back at work and feeling very well.

Approximately 2 years later, on December 9, 1946, he was re-admitted with a history of having had bouts of vomiting, gas, belching and epigastric pain for the past month. This had increased in severity until he was admitted with complete pyloric obstruction. The patient had lost 20 lbs. in the past month. There was a large, smooth, firm swelling in the epigastrium.

He was treated with constant gastric suction for a few days with considerable relief of the pyloric obstruction. An x-ray following the ingestion of barium revealed a deformity of the pyloric portion of the stomach and duodenum, due apparently to an extrinsic mass. A diagnosis was made of pancreatic cyst causing pyloric obstruction by extrinsic pressure.

A laparotomy was performed on December 12. Upon opening the abdomen the pre-pyloric portion of the stomach was found to be extremely oedematous and over 1 cm. in thickness. It was displaced anteriorly by a large, rounded, dark, extremely tense mass in the lesser sac. Dissection revealed a large, oval cyst about 17 cm. in its long axis and 12 cm. in its short axis. On closer examination a small amount of thinned-out pancreatic tissue could be recognized on the superior border of this mass. The gallbladder was normal and pressure on it caused bile to pass through the sphincter of Oddi, demonstrating that the extra-hepatic biliary tract was patent. The anterior, superior and inferior borders of the cyst were freed. The cyst contents were then aspirated to facilitate further dissection. It was then seen that there was a small nodule of pancreas (2 cm. long and 1½ cm. in diameter) on the splenic end of the cyst. Realizing that this nodule was probably the source of the secretion filling the cyst it was determined to remove this tissue in its entirety. Therefore, a difficult dissection was performed among all the dilated veins and arteries of the region. The terminal portion of the gland as well as all the cyst wall to within 2½ cm. of the second portion of the duodenum was removed. It was not considered wise to remove any more of the cyst due to the proximity of the ampulla of Vater and the common bile duct. This small portion of the cyst was invaginated on itself by three rows of sutures and left *in situ*. The abdomen was closed without drainage. The postoperative course was stormy for three days, but on the fourth day he was feeling much better. He began to eat, became cheerful and was discharged on the 11th postoperative day. Estimation of his fasting blood sugar on several occasions gave normal results.

Six weeks later he was back at his job doing hard, manual labour. He has been seen at regular intervals since. Normal weight has been regained and now, 32 months after his operation, he feels perfectly well and has no complaints.

Pathological report of specimen submitted.—Pseudocyst of pancreas. Thickened areas of cyst wall contained pancreatic tissue which shows considerable fibrosis and patchy infiltration. The cyst fluid contained over 20 Wohlgemuth units of amylase per c.c.

One cannot be dogmatic about conclusions derived from a single case. However, this case is particularly valuable and interesting in that it demonstrates the production of a pancreatic pseudocyst in an individual who, two years previously, had an acute pancreatitis with necrosis, both diagnoses having been confirmed by laparotomy and tissue biopsy. At the time of the first operation the gallbladder, extrahepatic biliary tract and liver appeared normal. There was no evidence of steatonecrosis. Similarly, at the time of the second operation, there was still no evidence of steatonecrosis and the bile duct, gallbladder and liver still appeared normal. The cause of the acute necrosis appears to have been of vascular origin as a result of thrombosis. There is no history of trauma to the epigastrium or abdomen in this case. It would appear that there is a difference between this type of pancreatic necrosis and the acute pancreatitis causing steatonecrosis and usually seen in conjunction with disease of the biliary system.

The literature states that in cases of pancreatic pseudocyst 5 to 8% show a tendency to diabetes mellitus. From this case it would appear that the amount of pancreatic tissue left is not the determining factor. This patient was left with practically no pancreas, yet at no time has he displayed a diabetic tendency. In the treatment of pancreatic pseudocyst we feel that the secretion filling of the cyst is due to the presence of a distal secreting portion of pancreatic tissue and the removal of that portion must be the ultimate aim of the operation. This should bring complete success whereas anastomosing the cyst to the small bowel, or some other portion of the gastro-intestinal tract, is actually only a palliative method.

#### SUMMARY

A review of the literature of pancreatic cyst and report of a new case of pancreatic pseudocyst is presented.

The author concludes that pancreatic cyst is due to destruction of an intermediate portion of the pancreas and its ducts by inflammation, trauma or vascular disturbance, leaving a severed portion of pancreas unconnected with

the digestive system. The treatment, therefore, must be to remove completely that distal portion of the pancreas forming the cyst.

The author wishes to thank Drs. Macgregor and Hanson for the use of the pathological report summaries which appear in this article.

#### REFERENCES

- ANGEL, E.: *Southern Med. & Surg.*, **100**: 57, 1938.
- ADAMS, R. AND NISHIYIMA, R. A.: *Surg., Gyn. & Obst.*, **83**: 181, 1946.
- ROBSON, A. W. M. AND CAMMIDGE, P. J.: *The Pancreas*, W. B. Saunders Co., Philadelphia, 1907.
- LINDAU, A.: *Actopath. et microbiol. Scandinav. supp. 1*, pp. 1-128,—quoted by K. K. Nygoord, 1926.
- KOERTE, W.: *The Surg. Diseases and Injuries of the Pancreas in Deutche Chirurgie* edited by von Bergmann and von Bruns; vol. 45. Stuttgart: Ferdinand Enke.
- JUDD, E.: *Minnesota M.*, **4**: 78, 1921.
- PINKHAM, R. D.: *Surg., Gyn. & Obst.*, **80**: 225, 1945.
- LAZARUS, B.: *Ztschr. klin. Med.*, **51**: 45, 1903.
- ARCHIBALD, E.: *Surg., Gyn. & Obst.*, **28**: 529, 1919.
- DICKOFF: *Inaug. theses*, Rostock, 1894.
- TILGER, A.: *Virchow's Arch.*, **137**: 348, 1894.
- JUDD, E., MATTSON, H. AND MAHORNER, H. R.: *Arch. Surg.*, **22**: 838, 1931.
- KERR, A. A.: *Surg., Gyn. & Obst.*, **27**: 40, 1918.
- CULLER, R. M.: *J. Am. M. Ass.*, **75**: 20, 1920.
- HAMILTON, C. S.: *Surg., Gyn. & Obst.*, **35**: 655, 1922.
- SCHWYZER, A.: *Minnesota M.*, **4**: 82, 1921.
- GORDIN, A. E.: *Ann. Surg.*, **106**: 1095, 1937.
- JEDICKA, R.: *Rozhledy v. chir. a gynokol.*, Prag., 1921.
- JURASZ: *Ibid.*, 570, 1932.
- HAHN, O.: *Zbl. chir.*, **54**: 585, 1927.
- CHESTERMAN, J. T.: *Brit. J. Surg.*, **30**: 234, 1943.
- KERSCHNER: *Ibid.*, 642, 1936.
- WALZEL, P.: *Mitt. Grenzgeb. Med. Chir.*, **40**: 171, 1927.
- BROCQ, P. AND ABOULKER, P.: *La Presse Médicale*, **48**: 222, 1940.
- ALTSCHULER, S. S. AND MEYERS, M. P.: *Harper Hosp. Bull.*, March, 1942.
- BOZEMAN, M.: *Med. Rec.*, **21**: 46, 1882.
- HARRISON, C. AND COOPER, F.: *J. Tennessee State Med. Ass.*, **36**: 299, 1943.

#### RÉSUMÉ

Un cas de kyste pancréatique apparu deux ans après une pancréatite hémorragique aiguë qui avait été traitée par fistulisation après marsupialisation est présenté à la suite d'une extirpation totale du kyste, fermeture totale de la paroi abdominale, sans drainage guérison complète après plus d'un an.

L'auteur ne peut porter de conclusion sur un seul cas mais l'étude de celui-ci a démontré que les voies biliaires, vésicule et canal cholédoque, n'avaient pas participé au processus inflammatoire pancréatique. La cause de l'inflammation était, sans doute, d'origine infectueuse; ce malade n'a pas présenté de symptômes de diabète à date quoiqu'il soit resté qu'avec une très faible quantité de tissu pancréatique.

Il croit que le traitement de choix est l'extirpation de la portion du pancréas que s'est trouvée séparé du corps de la glande par le processus nécrotique, et qu'en enlevant cette portion nous enrayons 'ipso facto' la possibilité d'un nouveau kyste, et la partie fibreuse qui reste s'atrophie.

L. P. MOUSSEAU

Perhaps it is one of the important qualifications for success in research that a man should know by the subconscious reasoning which we call instinctive judgment whether what appears to be an accident, a phenomenon presenting itself quite unexpectedly, is just a nuisance, the result of some trivial error, so that the further study of it will lead to nothing but waste of time and energy, or whether on the other hand it offers a possible clue to some new discovery of real importance which ought to be followed even at the cost, perhaps, of a diversion from the original objective.—Sir Henry Dale.

## POLYOSTOTIC FIBROUS DYSPLASIA OF BONE\*

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**A**GAIN we are confronted with a diagnostic entity that as a rule first manifests itself to the radiologist. As he is in that position, it behooves him to be cognizant of that possibility, each time he is confronted with a "cystic" appearance of the bones. The condition has a much brighter prognosis, with much less radical treatment, than the majority of conditions have for which it is mistaken. Thus, one is well advised to keep the possibility in mind.

Although a case has been described by Telford<sup>1</sup> as far back as 1931, and a number of others reported since, the lesion is still probably not as well known as it should be; it is still considered a rarity and the diagnosis often not considered. From our own experience, it would seem that if we had been more aware of the condition, the diagnosis would be made more frequently.

In considering polyostotic fibrous dysplasia we are again presented with a bony lesion that when it first came to our attention looked as though we had a typical radiographic picture. Like so many tumours of the bone, almost each new case seems to confront us with exceptions to the rule. One after the other of our diagnostic citadels falls and once more we are thrown at the feet of the ever-discerning microscope. Thus, we do not have one or two criteria that when filled automatically ring up a diagnosis of polyostotic fibrous dysplasia. Rather, as is nearly if not always the case, we must consider all our radiographic findings in the light of every bit of clinical information we can glean. Then and then only should we venture on anything other than a differential diagnosis.

As Louis Lichtenstein<sup>2</sup> has so ably presented the subject in every detail, only brief mention will be made of its diagnostic criteria, along with the presentation of our own two cases.

**Incidence.**—Most of the cases seem to involve young adults and children, but it does occur in the fourth and fifth decades. It is seen more frequently in females, the ratio being, at least, three women to one man.

**History.**—The patient usually complains of a painful extremity, of months' or possibly years' duration, which may or may not be accompanied by a deformity and weakness. The first manifestation may be a pathological fracture. The history of injury can usually, if not always be elicited but is of questionable significance. Precocious menstruation and hyperpigmentation are reported by Albright,<sup>3</sup> in children suffering from a severe form of the disease.

**Clinical findings.**—With regard to the blood chemistry, calcium and phosphatase levels are within the normal limits. This helps to differentiate between osteitis fibrosa cystica in which these levels are usually reversed. The alkaline phosphatase blood level is usually elevated in some cases, as high as 50 units Bodansky (normal upper adult limit 4 units).

**X-ray criteria.**—Usually, only the long bones of one extremity are involved. However, cases are reported in which the condition is not necessarily unilateral or confined to the long bones. It may involve any bone in the body or any portion of a bone, including the metaphyseal, diaphyseal or epiphyseal portions. The condition in the bone causes expansion and thinning of the cortex, a rarefied and trabeculated appearance or coarse honeycombing and secondary deformities of the affected bones. According to Sante,<sup>4</sup> the lesion may develop in an eccentric manner and appears to involve a crescent of the cortex. However, this type of development is apparently not essential.

**Differential diagnosis.**—As the changes in bone are often misinterpreted as being due to cystic disease the commonest pitfall seems to be to diagnose an osteitis fibrosa cystica. If only one bone is examined a giant cell tumour, localized cyst or enchondroma, may be erroneously considered. Hand-Christian-Schüller's syndrome and dyschondroplasia may at times also be suggested.

The peculiar appearance is due to replacement of the spongy bone and filling in of the medullary cavity by gritty greyish white tissue containing spicules of poorly calcified primitive bone. The appearance of a biopsy specimen under the microscope is fairly characteristic.

**Treatment.**—No treatment is known that enjoys any degree of success. However, since very few cases, if any, succumb to the disease, the prognosis is much better than that of some of the other conditions for which it is mistaken.

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There is evidence that in later life a static equilibrium may be established in most cases. Surgery should be limited to treatment of spontaneous fractures and to osteotomy in selected cases for correction of deformity (severe bowing). Moderate x-ray therapy may be of some benefit. However, heavy radiation does not seem advisable, as it would superimpose the possibility of radiation necrosis on a bone that is already taxed to its utmost to withstand a pathological fracture.

#### CASE 1

The patient, G.K., a white male, aged 55, entered the hospital on July 9, 1947, complaining of pain, swelling and deformity of the left shin and knee for three years.

His past history revealed that in 1930 he fractured his left patella which was reduced in plaster. In 1937, he refractured the patella and an open reduction was carried out. Following this last reduction, swelling of the patella increased for two months and has remained ever since.

The history of the present illness indicated that in April, 1944, the patient struck his left shin against an overturned bench. An abrasion resulted which did not heal for a month but became inflamed and swollen and the patient was advised to enter hospital. In hospital a biopsy was taken from the left shin and the diagnosis was osteitis fibrosa cystica. The patient was transferred to another hospital for surgical treatment of a parathyroid adenoma.

During this second stay in hospital, a thorough clinical investigation was carried out including blood chemistry, x-ray and a second biopsy. From the latter the case was considered not to be one of von Recklinghausen's disease, but an alternative diagnosis was not made before discharge in August of that year. After leaving the hospital, the leg continued to be swollen and, at times, to give pain, and a metal brace was worn to guard against the possibility of a pathological fracture.

On this admission the physical examination revealed considerable oedema and enlargement of the left knee and lower leg. There were old oblique scars, transverse over the patella and vertical over the middle of the tibia. The patella was greatly enlarged but moved freely and the knee flexed readily. There was some restriction of movement at the ankle joint and the skin over the shin was a dusky red. The remainder of the physical exam-

ination was essentially negative, and pulse, temperature and respirations were normal throughout this stay in hospital.

Radiological consultation was requested and routine radiographs of the left femur, tibia and fibula were taken. They demonstrated eccentric rarefaction of the lower half of the shaft of the tibia with trabeculation and cortical expansion and a similar condition was noted in the middle third of the shaft of the femur and in a grossly enlarged patella (Figs. 1, 2, and 3). Films of the skull, chest, pelvis, and other extremities revealed no further lesions of the bones. In comparison with the examination in June, 1944, there had been a definite extension of the lesion in the femur, (Fig. 4) to involve almost twice as much of the shaft. The patella had not increased in size but the "cystic" appearance was much more evident.

Although it was admitted the appearance was somewhat that of osteitis fibrosa cystica, the unilateral and eccentric development suggested to the radiologist the



**Fig. 1.** (Case 1).—Left tibia and fibula. **Fig. 2.** (Case 1).—Left femoral shaft. **Fig. 3.** (Case 1).—Left knee. **Fig. 4.** (Case 1).—Left femoral shaft.

#### BLOOD COUNTS

	June 1944	August 1944	June 1947
Red blood cells.....	5.1	4.7	5.61
White blood cells.....	6.9	6.0	5.9
Hæmoglobin.....	103%	95%	104%
Differential.....		Normal	Normal

#### BLOOD CHEMISTRY

	June 1944	March 1945	June 1947
Phosphorus.....	4.74-4.8 mgm.	5.5-5.7 mgm.	
Calcium.....	10.5 mgm.	9.0 mgm.	
Acid phosphatase.....	1.21-1.3 units	3.3-3.1 units	3.9 units (Bodansky)
Alkaline Phosphatase....	92.9-94 units	57-60 units	16.5 units
Blood Wassermann and Kahn—negative on two different occasions.			
Sedimentation Rate (6-47)—10 mm. in 1 hr.			
Widal—questionable response to <i>B. typhosus</i> .			
Urinalysis—repeatedly negative. Excretion of calcium in the urine was 16.0-17.2 mgm. per 100 c.c.			

diagnosis of polyostotic fibrous dysplasia. Biopsy specimens were examined and a similar diagnosis was reported by our pathologist, Dr. M. O. Klotz.

## CASE 2

The patient, L.S., a white female, aged 19, consulted her family physician in October, 1947, complaining of a steady pain and slight swelling in her right arm below the elbow, loss of strength of the right arm and restriction of movement, all of three weeks' duration.

The past history reveals that in January, 1946, the patient fell on the street striking her right elbow. The elbow became swollen without discoloration and was accompanied by steady pain and loss of function. These complaints lasted for about two weeks and then cleared up. Since then she had suffered recurrent attacks of pain and soreness below the elbow accompanied by loss of strength. At times, the pain was severe enough to keep the patient awake at night and require sedation. There was no noticeable change in the external appearance of the arm after the initial swelling regressed until three weeks ago.

No family history of bone or joint disease, and functional enquiry was negative. As a child the patient had measles and chicken pox.

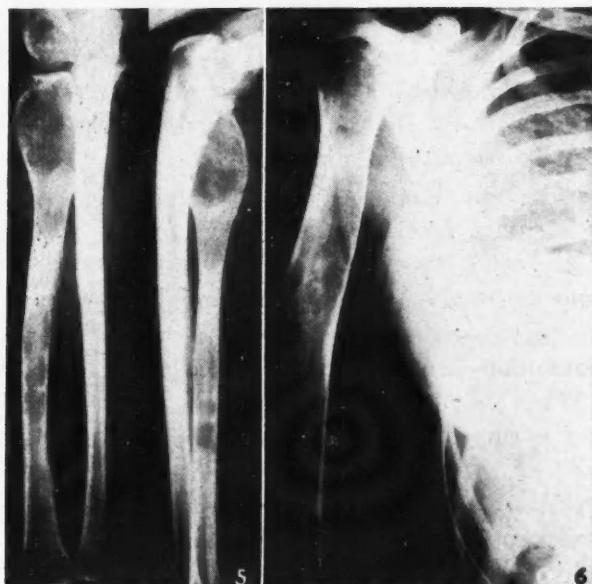


Fig. 5. (Case 2).—Right radius and ulna. Fig. 6.—Right humerus.

On physical examination, some deformity of the humerus and swelling of the upper third of the right radius was noted. There was definite loss of strength and she was unable to get her arm up to her head. The remainder of her physical examination was essentially negative. Pulse, temperature and respiration were normal. No abnormal pigmentation was noted.

Radiographs of the right arm revealed centrally-placed rarefaction of the head and proximal two-thirds of the shaft of the radius and of the distal two-thirds of the shaft of the humerus. Fine trabeculation was also noted within the rarefied areas. The portions of the bones involved were expanded and the cortex thinned (Figs. 5 and 6). Radiographs of the skull, left arm, chest, pelvis and lower extremities did not disclose further bony involvement. The consultant's opinion of the lesions of the right humerus and radius was that of polyostotic fibrous dysplasia.

On July 17, 1947, the cystic areas of the radius were saucerized. The pathological report on the resulting specimens confirmed the above impression.

Subsequent radiographs of the right arm have shown a slow filling-in with calcified material of the curetted portion of the radius, which at the time of the last

examination in March, 1948, was very incomplete, but had bridged the interosseous space and fused with the ulna. No appreciable extension of the lesions in the intervening period of time.

Physical examination also of April, 1948, revealed no appreciable variation in the appearance of the right arm in comparison to the left, except perhaps some slight atrophy of the musculature of the right forearm and complete loss of the supination and pronation. Her only complaint is that the arm is weak. Blood counts at this time were as follows: red blood cells 4,400,000; white blood cells 10,000; Hgb. 85%; differential normal; red cells, normal morphology.

## BLOOD CHEMISTRY

	June 1947	April 1948
Phosphorus.....	4.2 mgm.	1.9 mgm.
Calcium.....	8.5 mgm.	8.5 mgm.
Acid phosphatase..	3.0 units	1.9 units (Bodansky)
Alkaline phosphatase.....	3.6 units	3.3 units
Sedimentation rate (April 1948)—10 mm. in 1 hr.		
Urinalysis (July 1947)—Negative.		

## SUMMARY

The diagnostic criteria of polyostotic fibrous dysplasia are presented briefly.

The differential diagnosis and most common pitfalls therein are mentioned.

Two cases, which illustrate some of the variations in the clinical and radiographic picture, are reported.

## REFERENCES

1. TELFORD, E. D.: *Brit. J. Surg.*, 18: 409, 1931.
2. LICHTENSTEIN, L.: *Arch. Surg.*, 36: 874, 1938.
3. ALBRIGHT, F., BUTLER, A. M., HAMPTON, A. O. AND SMITH, P.: *New England J. Med.*, 216: 727, 1937.
4. SANTE, L. R.: *Principles of Roentgenological Interpretation*, Edwards Brothers Incorporated, Ann Arbor, Michigan, 6th ed., p. 115, 1945.

## ANÆSTHESIA FOR OBSTETRICS

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ANÆSTHESIA for obstetrics requires special care, as the unborn baby is susceptible to the influence of a general anæsthetic administered to the mother. Thus, induction should be rapid, and delivery accomplished at the earliest possible moment, in order that a minimal amount of anæsthetic will affect the baby. In addition, adequate oxygen must be provided the mother prior to and during delivery, so that the baby will not be anoxic at birth. Sedative drugs administered to the mother during labour transmit their action to the baby and the combination of sedative plus anæsthetic for delivery may produce a serious resuscitative problem in the newborn baby. Many women reach the delivery room with

undigested food in their stomachs and this presents the added serious hazard, to the mother, of possible vomiting during general anaesthesia. Excessively long labour, prematurity, toxæmia, multiple pregnancy and abnormal presentation, all may introduce special anaesthetic problems at the time of delivery.

In the private and semi-private case rooms of the Royal Victoria Montreal Maternity Hospital, nearly all patients have an episiotomy, and in a majority of the cases the delivery is operative. It is proposed to discuss the various types of anaesthesia used, and to review a series of cases delivered in this hospital.

Sedative drugs used during labour are one of, or a combination of, heroin, demerol, hyoscine, and seconal.

Pre-delivery examination, or rupturing of the membranes may be done with nitrous oxide-oxygen or pentothal sodium (0.5 gm. 2½% solution is the maximum amount used) anaesthesia.

For delivery, low spinal anaesthesia is preferred for primiparæ, if the baby is premature, if a difficult forceps delivery is anticipated, for toxic patients, and for patients with pre-existent upper respiratory infection. It is usually administered in primiparæ when the head can be seen, and in multiparæ when the cervix is fully dilated. The optimum level of spinal anaesthesia is D XI (pain produced by uterine contractions during labour is transmitted to the brain via afferent fibres which run in the hypogastric and aortic plexuses through the eleventh and twelfth sympathetic ganglia) and it should be kept at this point or lower.

The advantages of low spinal anaesthesia are as follows: (1) The baby is not affected in any way. (2) Adequate oxygen can be administered at all times. (3) There is no vomiting hazard. (4) It provides the best pelvic relaxation. (5) The baby can be seen and heard by the mother as soon as it has been delivered.

There are some disadvantages: (1) Post-spinal headache may be mild or severe, and may last from a few hours to many days. (2) Operative delivery is nearly always necessary. (3) Occasionally anaesthesia is not complete for from twenty to thirty minutes after injection of the anaesthetic mixture. (4) Some patients prefer to be asleep. (5) If the baby is deformed the mother cannot be prepared for the shock of seeing it.

The technique used in administering low spinal anaesthesia is as follows: The patient is sitting, with her feet resting on a stool at the side of the delivery table. A sterile towel is placed at the base of the spine, and the back is painted twice with tincture of zephiran. Lumbar puncture is done in the third or fourth lumbar interspace, using a 20 gauge needle. Prior to lumbar puncture the subcutaneous tissues are infiltrated with 1% novocain solution which contains ¾ gr. of ephedrine sulphate per c.c. Usually the dosage of ephedrine sulphate is ½ to ¾ gr. The anaesthetic mixture consists of 1 c.c. each of 1% pontocaine hydrochloride, and 10% glucose saline solution. These are mixed, and injected slowly without barbotage, between pains. Following injection of the anaesthetic mixture, the patient remains sitting for from one to five minutes, and then reclines on the delivery table, whose head has been raised about thirty degrees, for a further five minutes. She can then be prepared for delivery.

Pulse and blood pressure are taken as soon as possible after administration of the anaesthetic, and then every ten minutes. 100% oxygen is delivered to the mother by mask until the baby has been born. On her return to bed the mother is kept flat for twelve hours.

When low spinal anaesthesia is not chosen, then cyclopropane-oxygen anaesthesia is used for delivery, unless the attending obstetrician requests the use of some other type of anaesthesia. Cyclopropane-oxygen anaesthesia provides rapid induction, adequate oxygen, and satisfactory relaxation. However, any delay in delivery of the baby after anaesthesia has been induced, may allow transmission of the anaesthetic agent to the baby, and thus it may require resuscitation following delivery. Women under general anaesthesia in the case room must be watched especially carefully for evidence of vomiting, as they frequently have indulged in large meals after labour has commenced.

Atropine sulphate gr. 1/150 is administered intravenously before induction of anaesthesia. Closed circuit, absorption type machines are used. For induction of anaesthesia the bag is filled with oxygen and 500 c.c. each of oxygen and cyclopropane are added to the system until the patient is anaesthetized. The flow of cyclopropane is then regulated according to the needs of the patient. By this method satis-

satisfactory anaesthesia for delivery should be obtained within five minutes. Suction, and rubber airways are always available, but the patients are not intubated. Cyclopropane-oxygen anaesthesia is said to reduce the oxygen content of fetal arterial blood by about 20%.

Nitrous oxide-oxygen and sacral block anaesthesia are used when requested or indicated.

The following tables demonstrate the types of anaesthesia used in this series for various presentations and procedures, and the results obtained. Two hundred consecutive cases have been reviewed in order to obtain the necessary statistical data.

Headaches occurred in approximately 10% of cases following low spinal anaesthesia. These lasted from three to ten days, and were slight to severe. One patient had a severe upper respiratory infection at the time of delivery, and consequently low spinal anaesthesia was used. One patient with severe pre-eclamptic toxæmia was also delivered under low spinal anaesthesia.

From the above, it can be concluded that some patients may not wish to have low spinal anaesthesia for delivery, because of the possibility of post-spinal headache. This disadvantage would seem to be more than outweighed when it is con-

TABLE I.  
TYPES OF ANÆSTHESIA

Anæsthesia	Para I	Para II	Para III	Breech	Twins	Other	Percentage
Spinal (pontocaine).....	74	33	13		1	2	61.5
Cyclopropane.....	19	26	23	1	1		35.0
Nitrous oxide.....	2	2	1	1			3.0
Sacral block.....					1		0.5

	TYPES OF DELIVERY			
	Spinal (pontocaine)	Cyclopropane	Nitrous	Block
Spontaneous.....	1 - 0.5%	5 - 2.5%	4 - 2.0%	
Spontaneous (episiotomy).....	4 - 2.0%	25 - 12.5%	1 - 0.5%	
Low forceps (episiotomy).....	92 - 46.0%	30 - 15.0%	1 - 0.5%	1 - 0.5%
Mid forceps (episiotomy).....	26 - 13.0%	10 - 5.0%		
Forceps.....	95.8%	57.0%		

Condition	RESULTS - BABY			
	Spinal (pontocaine)	Cyclopropane	Nitrous	Block
Premature.....	6	1		
Head injury.....	3	1		
Asphyxia livida.....	2 (twins)	10	1	1
Deformity.....	2	1		
Dead.....		2		

The seven premature babies (3 to 6 weeks) were all in satisfactory condition following delivery. The three cases of head injury listed under pontocaine, were all large babies, and the deliveries were difficult forceps extractions. All cases of asphyxia were successfully treated (the twins were premature, small babies). Neither of the deaths can be attributed to anaesthesia as the fetal heart was unobtainable prior to delivery, in both cases.

sidered that babies delivered under low spinal anaesthesia are practically always active, even when the mother has received heavy sedation during her labour. It is probable that three of the babies in the series would not have survived if curtailment of fetal arterial oxygen and an anaesthetic had been added to long, difficult deliveries: 4% of the babies delivered under low spinal anaesthesia, required resuscitation, and 14.3% of the babies delivered under general anaesthesia.

The types of anaesthesia described require the constant attention of a trained anaesthetist, and thus will usually be confined to hospital practice.

#### BIBLIOGRAPHY

1. ADRIANI, J.: *The Pharmacology of Anesthetic Drugs*, C. C. Thomas, Springfield, Ill.
2. LULL AND HINGSON: *Control of Pain in Childbirth*, Lippincott, Philadelphia, Pa.

TABLE II.

RESULTS - MOTHER		
Anæsthesia.....	Spinal (pontocaine)	Cyclopropane
Headache.....	12	
Upper respiratory infection.....		2
Vomiting during anaesthesia (serious)....		4

**A STANDARDIZATION OF THE LEWIS  
METHOD OF VENOUS PRESSURE  
DETERMINATION\***

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ONE of the most important factors governing cardiac output is the "effective right auricular filling pressure". In right-sided heart failure this pressure rises, partly as a result of an insufficient cardiac output, and presumably, to a greater extent, by a compensatory mechanism (vaso-constriction, retention of sodium chloride and water<sup>1</sup>).

Effective auricular pressure is equal to the actual pressure plus the negative pressure in the pericardial space. Recently, actual auricular pressure has been recorded in man by using an intracardiac catheter connected to a special manometer<sup>2</sup> the method being for clinical purposes obviously unsuited. One must, therefore, depend on the determination of venous pressure in peripheral veins, which has, in the past, been considered to parallel closely the actual pressure in the right auricle. For this determination the intravenous method of Moritz and Von Tabora (introduced 1909), using a vein in the antecubital fossa, has been generally employed.

Unfortunately there is no constant relationship between the pressure in the right auricle and in peripheral veins; the latter is always higher, the excessive pressure depending on the rate of blood flow, the distance of the right auricle from the point of measurement and the lumen of the veins. Furthermore, due to the collapsibility of veins, negative pressures in the intrathoracic veins are not transmitted to the periphery,<sup>3</sup> and as a result, when right auricular pressure is low, the pressure in the antecubital veins is virtually independent of auricular pressure.

In 1930 Lewis,<sup>4</sup> using the veins of the neck, laid the foundation for a clinical method of venous pressure determination which is painless and can be quickly and accurately performed. The value of Lewis' method was emphasized by McMichael,<sup>5</sup> who observed that in patients with heart failure, venous pressure determinations employing this procedure were as accurate and

reliable as those obtained by using the method of Moritz and Tabora.

In addition to its simplicity, the method of Lewis has the important advantage that the distance from the right auricle to the jugular veins is short, while the connecting veins are large. As a result the pressure in the jugular veins cannot be significantly higher than in the right auricle and the variations in pressure associated with the cardiac and respiratory cycle are transmitted to the point of measurement. Doupe *et al.*<sup>6</sup> observed that pressure in the jugular veins was not altered by variations in the peripheral blood flow, vaso-constriction and vasodilation, all of which affected pressure in the veins further from the heart.

In recent years an instrument has been devised<sup>7</sup> facilitating a more accurate determination of venous pressure in the veins of the neck in cases of heart failure (Fig. 1). Unfortunately the method of Lewis was never advanced to the stage of standardization and observations on normal subjects have not been reported, which may account for the fact that this method has never been widely adopted.

A difficulty in all methods of pressure-recording in the veins and in the cavities of the heart is that the pressure has to be defined in cm. of water or mercury *above a certain point*. Various intrathoracic points, bearing a constant relationship to the external thoracic landmarks and thought to be at the centre of the right auricle or at the junction of the superior vena cava with the right auricle were proposed. One of these, the zero point as proposed by Lewis, 5 cm. vertically below the junction of the second rib with the sternal angle of Louis, has often been employed.

Bloomfield *et al.*<sup>8</sup> examined a group of normal subjects, in the supine position, by lateral x-ray, and measured the vertical distance from the anatomical angle of Louis to the mid-point between the anterior tip of the ventricle and lowermost point of the auricle. In these subjects, the average measurement was 5.82 cm. with a range of  $\pm 0.90$  cm. Patients with cardiac enlargement averaged 5.55 cm.  $\pm 1.50$  cm. In cases of emphysema where the antero-posterior diameter of the thorax is increased, the average vertical distance was 6.86 cm.  $\pm 0.80$  cm.

In view of the relatively slight variation in their estimations these investigators recommended that for scientific and clinical purposes,

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the 5 cm. figure described by Lewis should be regarded as the "reference point" from which all estimations can be based. When Lewis suggested that the point of orientation be taken where the second rib attaches to the sternum, he further stated that the vertical distance of this point to the centre of the right auricle would remain constant, regardless of whether the patient was supine, reclining or in a sitting position. Theoretically this conclusion may not be absolutely correct, but from a practical point of view is extremely useful.

#### A. PROCEDURE IN THE STANDARDIZED LEWIS METHOD OF VENOUS PRESSURE DETERMINATION

1. *The employment of the neck veins as a "manometer".*—When the veins of the neck are used for venous pressure determination, a natural manometer based on the right auricle of the heart is employed. In most normal subjects in the supine position a distension in the proximal portion of the jugular veins can be observed. Due to this distension, and the proximity of the right auricle, the influence of negative thoracic pressure is reflected in the jugular veins even when the venous filling pressure in the right auricle falls below the normal level. By careful observation one can determine the extent to which the "manometer" is filled: the filling level varying with the cardiac and respiratory cycle.

To partially offset any inaccuracy resulting from the streaming of blood through the main venous channels of the neck, digital pressure is applied parallel and inferior to the horizontal ramus of the mandible, preventing filling of the neck veins from above. By this procedure the presence of anatomical valves in the neck veins was noted to interfere, in many cases, with the systolic and expiratory reflux of blood, thus disrupting the "natural manometer". This disadvantage is eliminated by repeated, momentary release of digital pressure, allowing the veins to be refilled from above.

2. *Preparation of the patient.*—Absolute relaxation of the patient, in bed or on an examining table, for a period of two to four minutes is essential before any measurement should be attempted. The neck is then observed and the muscles palpated to determine their state of laxity, since any tension produced by the platysma or sternomastoid

muscles on the neck veins will raise the true value of venous pressure. These difficulties are relieved by rotating the patient's chin a few centimetres to the left or right as the case may be. Since flexion of the neck (with the chin approaching the sternum) also impedes the blood flow, it may be avoided by keeping the neck in a slight degree of unforced extension.

The absolute supine position of the patient as a rule is optional for venous pressure observations, but a small pillow or cushion may be placed under the head and neck when necessary, to ensure relaxation. In cases of extremely low venous pressure, as seen in nephrosis, shock, or occasionally in normal subjects, it may be necessary to raise the foot of the bed in order to obtain a filling of the jugular veins. In cases of cardiac insufficiency, or any disease accompanied by a high venous pressure, the patient must be supported by pillows under the neck and head, so that he relaxes in the orthopnoeic position. A Gatch frame or the cardiac bed of Lewis is ideal for estimations in these cases. If in one position the veins of the neck appear as distended non-pulsating cords, then the patient must of course be changed to a more erect posture and another determination attempted.

Especially in cases of passive venous congestion with enlargement of the liver, etc., one must avoid pressure on the abdomen from the patient sitting in a hunched, kyphotic position or from undue flexion of the hips. This precaution is stressed since the hepatojugular reflux (Pasteur-Rondot phenomenon<sup>9</sup>), when effective, results in a markedly raised venous pressure as recorded in the neck. In a series of cases from this clinic, exhibiting passive venous congestion, the reflex was noted to increase venous pressure in the superficial jugular veins as much as 4 cm. H<sub>2</sub>O when the patients were allowed to remain in an unsatisfactory position.

3. *Observation of the venous pulsations.*—As Lewis has mentioned, this phase of the procedure must be carefully evaluated since hasty observations may lead to completely erroneous results. The patient is placed in a position as previously mentioned, in order that the venous pulsations can be clearly seen. In cases where pulsations and collapse of the veins are difficult to detect, a flash light shone obliquely on

the neck, in a semi-darkened room, will greatly facilitate more accurate observations. In the majority of cases the superficial veins (external and anterior jugular veins) are clearly visible, but in their absence, pulsations of the deeper veins may be recognized, usually with little added difficulty. However, to avoid confusion between venous and arterial pulsations one must remember that the former are rarely palpable and when observed, exhibit a distinct undulatory character which may have as many

from above, must be taken as the point of measurement. The point of collapse, being directly related to the cardiac and respiratory cycle, is at its minimal level when diastole occurs during the inspiratory phase of respiration.

#### 4. An explanation of the venous pressure instrument:

The instrument, constructed of wood and light metal, consists essentially of two arms, (A and B) at right angles (Fig. 1). When in use, the vertical arm is placed on the chest at the sternal angle of Louis and the horizontal section is adjusted so that the tip of its 5 cm. projection (C) (representing the 5 cm. constant of Lewis) rests exactly at the point of previously determined venous collapse. Once the spirit level (D) of the horizontal arm has been trued, the exact venous pressure can be read directly from the scale of the instrument.

The horizontal arm (B) is adjustable and its length can be altered depending on the varying distance of the sternal angle from the veins of the neck.

In cases where the venous pressure is less than 0 cm. H<sub>2</sub>O, the instrument is reversed, the horizontal arm plus its projection is placed on the sternal angle and the vertical section held at the lowest level of venous collapse. In such cases, the scale will always read higher than 10. To obtain a correct result, the higher figure must be subtracted from 10. For example, if the reading is 12 cm., the pressure is recorded as 10-12 = -2 cm.

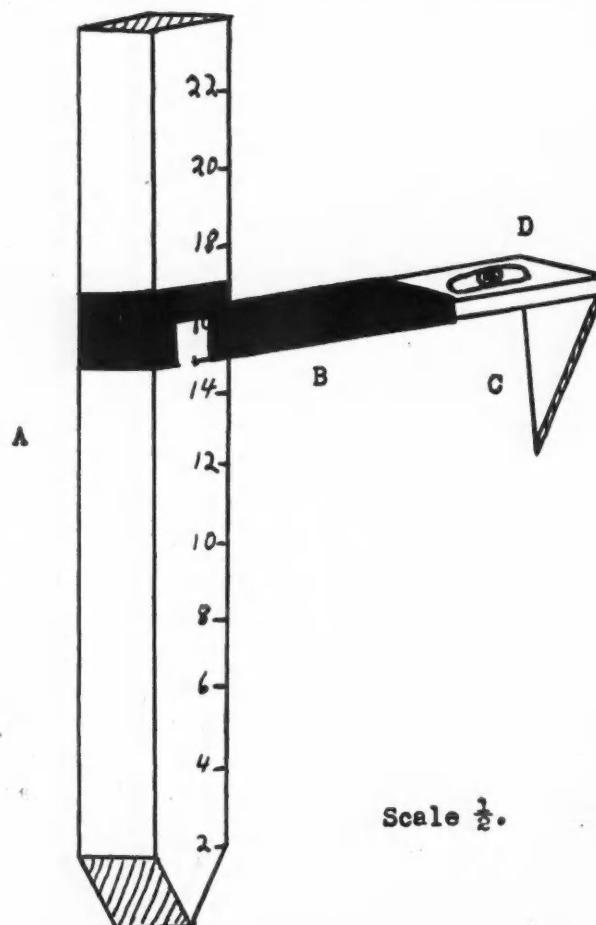


Fig. 1.—Instrument for venous pressure estimations. Normal scale:

1. Vertical arm, A = 24 by 2 cm.
2. Horizontal arm, B = 10 by 2 cm. (compressed length)  
= 16 by 2 cm. (extended length)  
i.e., metal projection (heavily shaded) = 6 by 2 cm.  
wooden portion with spirit level D = 10 by 2 cm.
3. Projection arm, C = 5 by  $\frac{1}{2}$  cm.
4. Metal band on vertical arm A = 2 by 2 cm.

as three phases: during diastole, venous collapse is abrupt, while in systole a "plateau" level is observed.

In order to produce uniform results the lowest level at which complete collapse of a vein is observed, while filling is digitally prevented

#### B. THE RESULTS OF DETERMINATIONS IN NORMAL SUBJECTS

1. The first series of experiments was performed to determine the influence of posture on venous pressure evaluations as recorded in the neck. For these determinations 50 normal subjects (with regard to cardiovascular system) were used. They were placed upon a tilting plank which varied from the supine to the reclining position (30°); with each passive elevation in position the venous pressure in the neck veins was recorded, until it fell well below the clavicle and could not be accurately measured.

The results of these determinations showed that the level of jugular vein collapse remained a constant value in 36 subjects (72%) and was raised slightly with an elevation of position, in 14 subjects (28%). However, this alteration was never more than one cm. H<sub>2</sub>O and in most cases where it occurred, the difference was not greater than 0.25 to 0.50 cm. H<sub>2</sub>O.

2. It became imperative to ascertain if an average value of venous pressure recordings could be obtained in a group of normal subjects having a large variation in the size and shape of the thoracic cage. If it could be shown that patients with small flat chests had excessively high venous pressures and subjects

with barrel-shaped, emphysematous chests had excessively low pressures, then the absolute values of venous pressure, herein described, could not be of great use for clinical or scientific purposes without correction.

For this determination 55 normal subjects were examined and the correlation between the circumference and diameter of the thorax with the venous pressure, was determined. The results (Fig. 2) showed the extremes of pressure to vary from -2 to +4 cm. H<sub>2</sub>O, with 80% of the subjects varying from -1 cm. to +2 cm. H<sub>2</sub>O.

These figures are extremely interesting in view of the results obtained by Bloomfield, *et al.*<sup>8</sup> with intracardiac catheterization. In a series of 70 normal subjects they found the mean auricular pressure to vary from -2 to +2 mm. Hg. (-2.72 to +2.72 cm. H<sub>2</sub>O) with respect to atmospheric pressure.

From the graph it can be seen that the antero-posterior diameter of the thoraces ranged from 19 to 28 cm. at the fourth rib, and that the venous pressure was nearly independent of thoracic measurement.

3. The next point to be evaluated was the comparison of the Lewis and the direct method of venous pressure estimation in the neck and antecubital fossa. It was obvious that a variation in results would be obtained from these two methods but it was of interest to know if, in a group of subjects, a constant difference existed.

Determinations were performed in a group of normal subjects using a wide bore needle and manometer (4 mm. bore) filled with 3% citrate solution. The subject's arm was passively supported 5 cm. below the sternal angle and a vein in the antecubital fossa was punc-

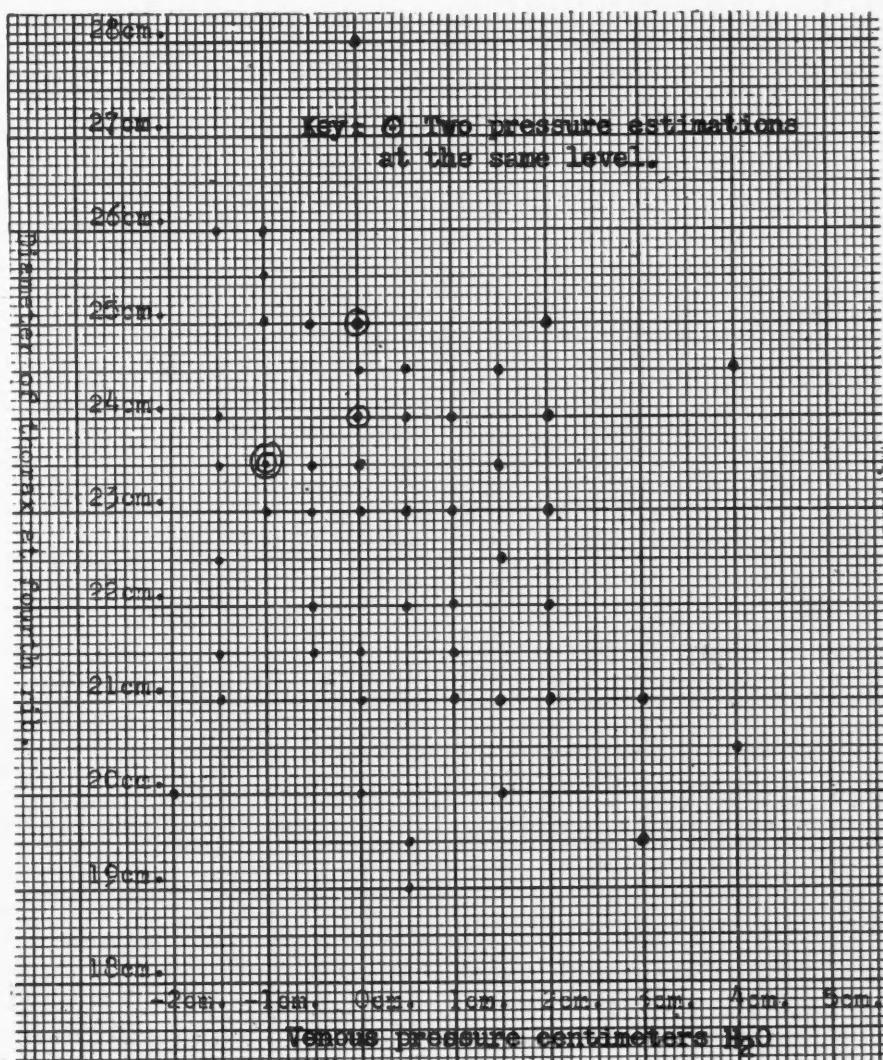


Fig. 2.—Graph showing values of venous pressure and the relation to thoracic diameter.

tured. The indirect pressure evaluation in the neck was obtained before and after the venipuncture, while the manometer readings were recorded on three successive occasions at three-minute intervals.

In this group of subjects the results obtained from the antecubital vein showed a variation of 1.5 to 9.5 cm. H<sub>2</sub>O, with a mean figure of 5.3 cm. At the same time the evaluations of the Lewis method varied from -2 cm. to +4 cm. H<sub>2</sub>O, with a mean value of 1 cm. From this same group of determinations the difference between the two methods was shown to be anything but a constant and ranged from 0.5 to 9 cm. H<sub>2</sub>O. Also it was shown that the venous pressure was always higher in the antecubital veins than in the jugular veins and was always on the positive side of zero.

4. The problem arose as to whether Lewis' method and the intravenous method, when evaluating pressure in the same superficial veins of the neck, would yield identical results. The same procedure and equipment was used as in the previous experiment and, although only a few subjects were examined in this manner, the results produced were conclusive. Equal values were obtained regardless of the method employed.

#### C. CLINICAL APPLICATIONS OF THE LEWIS METHOD OF VENOUS PRESSURE ESTIMATION

This method of estimation may be employed to advantage as a part of the routine physical examination. In some patients it may be sufficient to know that the venous pressure is within normal limits while in others an exact measurement may be essential in order to follow the clinical course. In this hospital the exact venous pressure is recorded in every patient and the procedure is considered as significant as measurement of the arterial blood pressure.

One of the most sensitive mechanisms to determine the effectiveness of treatment in patients with cardiac failure lies in the repeated evaluation of venous pressure in the neck. Following treatment with digitalis, diuretics, etc., a rapid drop in venous pressure is observed to parallel the clinical improvement of the patient.

This method is not only useful as an aid in prognosis but has also great diagnostic value. For example, in cases of ascites or generalized oedema, measurement of the venous pressure will quickly differentiate those due to cardiac, extra-

cardiac or mixed origin. In shock, an elevated venous pressure may indicate a cardiac or extensive pulmonary thrombosis as the cause of circulatory failure.

During the transfusion of severely anaemic patients, the venous pressure should be closely observed, since a rapid or extreme rise is often the forerunner of pulmonary oedema.<sup>10</sup>

Only a few clinical values of the Lewis method have been outlined, but in conclusion it may be said that the uses of this method are as numerous and varied as the situations which may require a simple, accurate estimation of the venous pressure.

#### SUMMARY

An outline of the fallacies in venous pressure measurement using peripheral veins is presented. The superiority of the method of Lewis is discussed, supported by theoretical evidence and the experiments of Bloomfield *et al.*

The procedure employed in the Lewis method of venous pressure estimation, regarding preparation of the patient, observation of venous pulsations and use of the venous pressure instrument is presented in detail.

In 50 normal subjects the venous pressure was demonstrated to remain practically constant, despite moderate postural alterations from the supine position.

In 55 normal subjects, pressure measured by the Lewis method was shown: (1) to be but little influenced by thoracic circumference and diameter; (2) to range from -2 to +4 cm. H<sub>2</sub>O with 80% of subjects ranging from -1 to +2 cm. H<sub>2</sub>O. These figures compare with those obtained by Bloomfield *et al.* in cardiac catheterization of the right auricle, i.e., -2.72 to +2.72 cm. H<sub>2</sub>O.

It was impossible to demonstrate a close correlation between the results obtained by the method of Moritz and Tabora in the antecubital veins and the method of Lewis in the jugular veins, when employed simultaneously in a group of subjects.

When the direct and indirect methods were employed simultaneously in the veins of the neck, identical results were obtained.

I wish to express my sincerest appreciation to Professor Dr. J. G. G. Borst of the University Medical Clinic, Amsterdam, Holland, for his untiring interest and counsel, without which this investigation would not have been possible.

## REFERENCES

1. BORST, J. G. G.: *Acta Medica Scandinavia*, Supplement 207, 130: 1948.
2. RICHARDS, D. W., COURNAUD, A., DARLING, R. C., GILLESPIE, W. H. AND BALDWIN, E. D. F.: *Am. J. Physiol.*, 136: 125, 1942.
3. WARREN, J. V. AND STEAD, E. H.: *Am. J. M. Sc.*, 205: 501, 1943.
4. LEWIS, T.: *Brit. M. J.*, 1: 849, 1930.
5. MCMICHAEL, J.: *Quart. J. Med.*, 27: 331, 1938.
6. DOUPE, J. S., KOYNOUU, R. A. AND SNODGRASS, S. R.: *J. Physiol.*, London, 92: 383, 1938.
7. LEISHMAN, A. W. D.: *Brit. M. J.*, 11: 773, 1946.
8. BLOOMFIELD, R. A., LAWSON, H. D., COURNAUD, A., BREED, E. S. AND RICHARDS, D. W.: *J. Clin. Invest.*, 25: 639, 1945.
9. HUSSEY, H. H. AND JEGHERS, H.: *New England J. Med.*, 237: 776, 1947.
10. SHARPEY-SCHAFFER, E. P.: *The Lancet*, 2: 296, 1945.

## HEMICRANIA\*

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THE literature on this subject is voluminous and in this paper an attempt is made, of necessity in a rather didactic manner, to correlate causes, types and treatment in a logical manner and to review some practical methods of handling this all too prevalent and disabling syndrome.

I am including Ménière's disease with migraine, as the *modus operandi* of these two problems would appear to be the same in that the scotoma of migraine and the vertigo of Ménière's are the result of vasospasm in different situations. The disparity between these situations is not so great if one considers the origin and not the termination of their blood supply. The auditory artery which supplies the labyrinth is a branch of the basilar and the posterior cerebral which supplies the occipital lobe is its terminal branch.

Roughly 80% of sufferers from Ménière's and migraine have a primary vasospasm followed by vasodilatation. The other 20% fall into the histamine sensitive or allergic group and show vasodilatation throughout. In cases of Ménière's disease belonging to this latter group, there is a dilatation of the capillaries of the stria vascularis with an over-production of endolymph which clamps down the function of both cochlea and vestibule and compensation gradually fails with the slow building up of an attack. These patients will give this history of the rather slow onset of their attack. Whereas in the primary vasospastic group (80%) the vasospasm causes a sudden anoxia in the cochlea and vestibule and the pa-

tient has a very sudden attack, sometimes literally falling in his tracks.

There is some disagreement as to the use of histamine in placing these people suffering from migraine and Ménière's in the proper group but I have found it fairly reliable. While it is probably true that one should doubt the diagnosis of hemicrania if ergotamine tartrate fails to give relief, yet it is impossible to classify them by this means as if it is given to the allergic or vasodilator group it naturally affords relief as it is a vasoconstrictor, and as the majority of the primary vasospastic group will receive it when they are in the stage of secondary vasodilatation, it will relieve them also. Some, of course, receiving it in the primary vasospastic stage will be made worse and this might give us a clue with a small percentage.

The reason it is so important to classify these cases properly is in order to apply the proper treatment. Obviously, vasodilators given to the allergic or histamine-sensitive group will make them worse and while ergotamine may relieve the primary vasoconstrictor group, it is enhancing and not relieving the cause of the primary vasoconstriction.

In migraine it is necessary to rule out hypertension, nephritis, sinusitis and brain tumour as causes of the headache, but none of these cause true hemicrania as a rule. Here too, we might mention that small group suffering from so-called histamine cephalgia but these people have no family history of this trouble, there is no aura and onsets at the fourth or fifth decade. The attacks are very frequent, usually occur at night and are relieved by standing or by pressure on the carotid or superficial temporal artery. The attacks are usually of very short duration and they can be reproduced by histamine. In the classical migraine there is family history, cyclic recurrence, aura, nausea in almost 100%, and vomiting in about half of the cases. The attacks usually begin at puberty and tend to disappear spontaneously with advancing years probably due to the onset of arteriosclerosis not allowing the secondary vasodilatation. There is usually a prodrome, with irritability, pallor, inability to concentrate, chilliness, scotoma, fortification spectra, etc. The pain is usually frontal or temporal at first and gradually spreads to involve the whole side or the whole head. The attack usually lasts for about twenty-four hours and local soreness often per-

\* Presented at Annual Clinic Day of Essex County Medical Society in April, 1947.

sists for a further twenty-four hours. If one considers large enough groups, there is no common factor found and psychopathic characteristics are not any more common in these people than in any cross-section of the population.

To get back now to our effort to classify these people properly. If 0.005 mgm. of histamine is injected intracutaneously in the histamine insensitive group, a wheal 1/4 to 1/3 inch in diameter with a surrounding halo of 1 to 1½ inches will develop. It appears in five minutes and begins to fade in ten and has disappeared in twenty minutes. In the histamine-sensitive group the wheal will be ½ inch or more in diameter, the flare 1½ to 2 inches and accompanied by one or more trailing pseudopods. It develops in five minutes but lasts fifteen to twenty minutes and fades in thirty minutes. In this latter group which constitutes at least 20% or more, a large portion of them will be found to be allergic to food factors, and by elimination diets or skin testing, these factors may be discovered. A further method of checking a suspected food is to have them avoid it for one week and then, after feeding them the suspected article, take a white blood count at twenty, forty, and sixty minutes. The white blood count drops and the percentage of eosinophiles rises. If the food at fault is easily avoided, there is no need to desensitize them, otherwise, this should probably be done.

If no food factor is found in this histamine-sensitive group then one must consider two lines of treatment. According to the histamine theory, these people have a lowered tolerance to it and the allergen stimulates an excessive production of histamine, causing a reaction. The release of histamine into the blood stream is only momentary as it is quickly taken up by the cells. Because of this, it seemed reasonable that tolerance would be raised more effectively by long-continued administration of histamine rather than by individual doses of increasing strength so therefore, in order to accomplish this, 2.75 mgm. of histamine diphosphate is dissolved in 500 c.c. of saline and this is given very slowly intravenously, taking four to eight hours for its administration. The patient must be watched carefully and if the blood pressure drops too rapidly, or flushing of the head or hives or asthma occurs, the rate must be slowed or administration stopped. This dosage is given daily for six days. Because of the in-

tense stimulation of an increased gastric acidity by the histamine, it is wise to give alkaline powders by mouth during its administration and it should never be used if there is any history suggestive of peptic ulcer for the same reason. It should also never be used in cases of hypertension or nephritis as the slowing effect on the circulation may predispose to thrombosis. The results of this method of treatment are good but it is dangerous and I have had enough trouble with it that I prefer the slow method whereby one gives 0.005 mgm. subcutaneously bi-weekly and work up to 0.5 mgm. or less of the base as a maximum, then dosage reduced to once a week for four more weeks and if necessary repeat the course two or three times with an interval of six months between courses.

However, an even better and much safer method than the use of histamine in this vasodilator or allergic group is the use of prostigmine, which, a vasodilator itself by virtue of its being a parasympathetic stimulant inhibiting the action of cholinesterase, at the same time seems to desensitize to histamine. The technique is simple—a 15 mgm. tablet is dissolved in an ounce of water and one gives 1 minim t.i.d. increasing 1 min. each dose until the patient is taking 10 min. t.i.d. Continue this for one week and then drop to a maintenance dose of 10 min. bi-weekly. If there is an impending attack, they should take an extra 15 to 20 min. I have found the results very good with this method, and, because it is so simple, and believing there is some truth in the theory that all migraine is due to liberation of histamine-like (H) substance in people abnormally sensitive to it or to an allergic diathesis, I have used it in primary vasospastic cases with some success and believe it is worth trying before subjecting them to a protracted course of treatment with the vasodilators.

One might say, why not let these people (histamine-sensitive group) use ergotamine tartrate all the time as it nearly always gives them relief. However, if used too often it can cause numbness and tingling and vascular cramps and aching, a warning of impending thrombosis, and I believe that the elimination of a specific allergen or desensitization by prostigmine is a better method of handling this group.

Now for the larger primary vasospastic, histamine-insensitive group. How should we treat them? Potassium thiocyanate has been used with some success and has the same action as nicotinic acid. It is given in doses of 3 gr. b.i.d. or t.i.d. to a blood level of 6 to 12 mgm. %. However, to my mind, it is too toxic a drug when there are equally efficacious and harmless substitutes.

There are two desirable methods of handling the vasospastic group. As mentioned, while ergotamine may give them relief, it is enhancing and not relieving the cause of the primary vasoconstriction and therefore, I feel it is wrong to continue its use. We will consider the simpler method of treatment of this group first. A test dose of 30 mgm. of nicotinic acid is given intramuscularly. The aim is a mild flush lasting ten to twenty minutes. If this is obtained then one starts intravenous injections of 30 to 50 mgm. two or three times a week for 8 doses, then the patient is taught to give himself daily intramuscular injections of 30 to 50 mgm. and after a month or so reduce interval to two or three times a week. At the same time, he takes 50 to 150 mgm. by mouth throughout this course and gradually only by mouth. The reason for insisting on intramuscular administration is that some people absorb nicotinic acid very poorly from the gastro-intestinal tract and many cases receiving no relief from oral administration have shown prompt response when it is given intramuscularly. This vasospastic group also benefits from the long-continued use of small doses of phenobarbital.

The second and somewhat more complicated method rests on the theory that migraine is due to a cyclic tissue toxæmia of metabolic origin and the deficiency of an enzyme necessary to oxidation and tissue metabolism. It was thought that substances increasing tissue respiration and oxidation of tissue by-products might correct this cycle. In severe cases, therefore, with ten or more attacks a month, one must give 100 mgm. of thiamine intramuscularly, daily, along with 50 mgm. of nicotinic acid t.i.d. p.o., 15 mgm. of pyridoxine daily and drams 4 of the syrup of B complex b.i.d. In less severe cases, the thiamine may be given tri-weekly and nicotinic acid reduced to 25 mgm. The treatment is continued for four months and if the results justify it, the dosage is gradually reduced. If there is an impending attack give an extra 100

mgm. of thiamine plus 100 mgm. of nicotinic acid t.i.d.

The largest group ever collected and followed by Palmer (500) were treated in this way and 65% obtained complete relief. In the small number I have been able to persuade to take it, the results have been very encouraging but it is slow and expensive. The mode of action is obscure as doses which would cure a deficiency are useless, so it is likely due to the medicinal effect. Nicotinic acid, of course, relieves the pre-headache vasoconstriction but thiamine apparently helps in relieving the basic toxic state arising from the disturbance of tissue metabolism. It is necessary to impress on these people that you are not giving them a cure for their headache as such, but that through the prolonged course of treatment you are endeavouring to remove the cause. Where it is necessary to use ergotamine you may find as I have that dihydro-ergotamine causes less nausea and vomiting than ergotamine tartrate. This is also supposed to be less toxic. The dose is double that of ergotamine tartrate, that is, 1 mgm. (1 c.c.) intramuscularly.

#### BIBLIOGRAPHY

1. FRIEDMAN, M. D. AND FRIEDMAN, D. A.: *Ohio State Med. J.*, 41: 1099, 1945.
2. LIEDER, L. E.: *Ann. Int. Med.*, 20: 752, 1944.
3. PALMER, H. D.: *Clinics*, 4: 531, 1945.
4. ATKINSON, M.: *J. Med. Soc. New Jersey*, 41: 11, 1944.
5. THOMAS, W. A. AND BUTLER, S.: *Am. J. Med.*, 1: 39, 1946.
6. PATTON, I. J.: *Canad. M. A. J.*, 54: 588, 1946.

## CASE REPORTS

### ENDOMETRIAL CULTURE AS POSSIBLE AID IN THE DIAGNOSIS OF PELVIC TUBERCULOSIS

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In this clinic tuberculosis in the female genital tract accounts for 8% of all pelvic infections, and since it is a difficult disease to diagnose, the following case report may provide a new diagnostic aid.

Mrs. L. F., aged 25 years, was admitted on February 14, 1948, having been referred from The Royal Edward

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Sanatorium at St. Agathe, where she was being treated for open pulmonary tuberculosis. Her previous admissions revealed that she has a child aged four years, that she had an appendectomy and left salpingo-oophorectomy in 1946, and that she had been treated on two previous occasions since February 1947, for pulmonary tuberculosis.

Her complaints on admission were: (1) low back pain; (2) pain in the left lower quadrant; and (3) foul vaginal discharge. All of these were of two months' duration.

In the history of the present illness the patient stated that she began noticing the above complaints early in December, 1947, and that she had always had low back pain with her menses. She stressed, however, that her low back pain was now of a different character and was more steady. All of her complaints, she stated, has increased in severity.

Her past history revealed that she had typhoid fever at the age of four years and that she was in good health until February, 1947, when pulmonary tuberculosis was diagnosed and she was admitted to the St. Agathe Sanatorium and treated by pneumothorax and bed rest. The weight lost during the six months prior to February, 1947, had been regained and at the present time she was feeling well again except for the new complaints.

Physical examination revealed a well developed, well nourished young woman. Her temperature was 98.8° F., her pulse 102, and her blood pressure 120/80. There was a slight nodular enlargement of the thyroid gland, and her chest revealed slight diminution in breath sounds on the left side with slight elevation of the base on the same side; no rales were heard. The abdomen showed a left paramedian operation scar and there was tenderness and resistance in the left lower quadrant. Organs were not palpable, nor were there any masses. Pelvic examination displayed a healthy, parous vulva and a thick, stringy muco-purulent vaginal discharge; no offensive odour was noted. The cervix was parous, slightly eroded, firm and tender on movement, mobility being somewhat limited. The uterus was of normal size and position but not freely movable. The appendages revealed thickening on the left side with some tenderness. The right ovary and tube were readily palpable and tender.

The diagnostic impression was an acute or sub-acute lesion on the right side of the pelvis with possible exacerbation of an old lesion on the left. The lesion, or lesions, were thought to be non-tuberculous.

*Therapy and progress.*—In view of the clinical impression of a non-tuberculous pelvic inflammatory disease, shortwave treatments were considered best and during her stay in hospital she received 27 such treatments of 20 minutes each. She was placed on bed rest and a good nourishing diet and in the meantime other tests were performed partly as hospital routine and partly as an attempt to throw some light on the etiology and acuteness of the disease. Thus it was that blood sugars, urine, and haematologic investigation were found to be non-contributory. A barium enema revealed no abnormality of the alimentary tract. A chest x-ray showed moderately advanced pulmonary disease, bilateral and probably active.

With regard to progress it was noted that, while the patient appeared well and in no distress at any time during her hospitalization, she was afebrile until the end of the first week after which she ran a slightly febrile course (up to 100.2° F.) with the characteristic "down in the morning, up in the afternoon" temperature curve. In the meantime the patient received her shortwave therapy, and on March 23, the twenty-first day of her cycle, an endometrial biopsy was obtained. Some of the endometrial tissue was sent to the pathology department, where it was examined microscopically and found to show a secretory phase with hemorrhagic extravasation into the stroma. No sign of an inflammatory process could be found. The remainder of the endometrial tissue was sent to the bacteriological department for smear and guinea-pig inoculation. The

guinea-pigs are as yet alive and will be sacrificed at the end of the third month following inoculation. The smear, however, revealed the presence of small numbers of acid-alcohol-fast bacilli.

The findings of these organisms in the uterine cavity led to the diagnosis of pelvic tuberculosis, probably in the Fallopian tube (right). Accordingly, the shortwave treatments were discontinued and the patient was returned to the sanatorium.

This case has been presented because it is considered to offer a practical and important possibility as an aid to the diagnosis of pelvic tuberculosis. This disease is silent and insidious in onset and presents no specific signs or symptoms. It must be differentiated from pelvic endometriosis. If after the use of sulfonamides, penicillin and diathermy, the condition becomes worse, endometriosis is more likely to be the pathologic lesion. If after the same treatment, there is no apparent improvement in the condition, then pelvic tuberculosis should be sought. This is best done by diagnostic endometrial biopsy, which will reveal the condition in 50% of the cases providing that the biopsy is taken one week before the onset of the next menstrual period. The above case report indicates that this percentage may be increased by the use of bacteriological smear and culture of the endometrial tissue.

#### A CASE OF INTUSSUSCEPTION

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As a useful preliminary to the perusal of this case report it is recommended that the reader see Morrison and Court on "Acute Intussusception in Childhood" (*Brit. M. J.*, p. 776, April 24, 1948). Their "table IV" shows "the relative distribution and associated mortality" in a series of 100 cases at Newcastle-upon-Tyne, *viz.*:

	Number of cases	Deaths
Small bowel.....	14	2 (14%)
Boundary ileo-colic.....	77	8 (10%)
Large gut.....	4	
Unknown.....	5	
Total.....	100 cases	10 cases

The child seen by me had a colo-colic intussusception. He was 18 months of age, the son of an operation-room orderly in a busy hospital. There was no family history of such a condition, and the father very kindly wrote the following history:

"Refused to eat and started vomiting even milk and water about eight hours after eating Monday, April 26, 1948. Seemed to be flushed and had a little temperature. Vomiting was with a good deal of force. Stomach did not appear sore. He was miserable the following day and did not eat or drink much on Tuesday. Wednesday ate a little and Wednesday night ate a fair supper; eight hours later vomited it again. Thursday was about the same as Tuesday; miserable and ate little Friday, and Saturday night vomited. Sunday miserable all day. Ate small supper. Bowels moved about 6 p.m. and a large growth about the size of thumb protruded through anus with some bleeding. Doctor called."

One's comment is this; here we have an intelligent father, medically trained, who for a week was not unduly alarmed at his son's symptoms. He and the mother were satisfied that the child was not in pain. To me, the child's history was one of reflex pyloric spasm, gastric retention, and projectile vomiting with relief. When called by telephone one was able to guess at the correct diagnosis.

At first examination (Sunday, May 2) the patient was a sturdy, healthy, placid boy of 18 months of age. He submitted to examination with no fuss. All systems were normal except for a lightly coated tongue and a raspberry-red tumour protruding from the anal orifice. There was no abdominal tenderness. The circumference of the tumour was defined digitally, and I reduced the mass (foolishly, as it later developed), thinking it to be a simple rectal polypus. There were a few drops of fresh blood after so doing. Arrangements were made for the child's admission to hospital on the following day.

*First operation, May 3.*—The child passed a peaceful night; since diathermy was to be used, open chloroform was given in the operating room. One was then unable to find the tumour, even on passing a small sigmoidoscope five inches up the large gut. The rectum and lower sigmoid contained some blood and particles of faeces.

*Second operation, May 4.*—Under open chloroform the sigmoidoscope was again passed and at a distance of 6 inches from the anus the tumour, a red, pedunculated, velvety knob, was seen, grasped and brought downwards. It could not be brought closer than 3 inches to the anus because it dragged the supporting sigmoid with

it, slipping away upwards again when the tension on its pedicle increased.

Finally a snare was passed and the narrow string-like pedicle divided quite cleanly, with no residual bleeding.

*Subsequent course.*—The child vomited on the day after operation but since then has been in perfect health. The stools have remained normal in every way. When last seen on September 10 the child was normal and had had no further symptoms.

*Skiagraphy, June 1 (Dr. K. D. Symington).*—"Grossly intact colon. Prominent redundancy of upper pelvic segments".

The pathological report by Dr. J. Duffin was: "a small true papilloma of colon without evidence of malignancy".

#### SUMMARY

A case is reported of colo-colic intussusception due to a solitary tumour (adenoma) of the sigmoid mucosa in a child. Such a condition falls within the 4% group and is not a common one. The child was cured by simply removing the tumour via an endoscope.

#### OSTEOMYELITIS OF THE NEWBORN\*

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Osteomyelitis in the newborn has been reported more frequently during the last few years. In 1922 Madier<sup>1</sup> reviewed the literature on 105 cases adding one of his own. In 1933 Dunham<sup>2</sup> reviewed 8 cases. Goldblom and Bacal<sup>3</sup> in 1937 wrote on osteomyelitis of the superior maxilla in the newborn. Dillehunt<sup>4</sup> in 1935 pointed out the importance of early diagnosis. Green<sup>5</sup> gave a mortality of 44% in the cases under 6 months of age. Stone<sup>6</sup> reported 4 cases of which 3 had multiple foci. Hutter<sup>7</sup> in a more recent review added 4 case reports. He pointed out the marked difference between the more benign single foci cases with good prognosis and the severe multi-foci cases with severe deformities if there is eventual recovery. Very little reference to surgery is noted. Most cases were treated, at least recently by combined penicillin and sulfonamide therapy.

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R.G., born May 3, at full term, normal delivery, circumcized on the 6th day, and discharged on the 8th day as a normal male infant. On May 28, the mother noted that any movement of the left arm caused pain. On May 31 when first seen there was swelling and tenderness of the left shoulder. X-ray examination on June 1 showed an area of destruction in the upper end of the shaft of the left humerus with the bony cortex intact, and considerable soft tissue swelling. The suggested interpretation was acute infective process or tumour probably sarcoma.

Biopsy of an axillary gland was done on June 2 and reported later as inflammatory tissue with a few giant cells, lymphadenitis acute.

Unfortunately penicillin and sulfadiazine had been started before blood culture was taken.

The temperature ran at 102.5° for three days only. The shoulder became more swollen, more immobile and the arm drawn back and internally rotated. On June 16 a swelling of the right knee developed. X-ray of the skeleton showed involvement of the periosteum along the lower half of the right tibia and a crescentic filling defect in the distal diaphysis. Syphilitic diaphysitis was suggested. The cord Wassermann had been nega-

subcutaneous tissue right anterior chest wall. Small patent foramen ovale.

I am indebted to Dr. R. C. Burr for his interest and assistance from the Department of Radiology, Hotel Dieu, and to Dr. D. W. Boucher's assistance Department of Surgery, Hotel Dieu Hospital.

#### BIBLIOGRAPHY

- MADIER, J.: *Nourison*, Paris, 10: 168, 1922.
- DUNHAM, E. C.: *Am. J. Dis. Child.*, 45: 229, 1933.
- GOLDBLOOM, A. AND BACAL, H. L.: *Canad. M. A. J.*, 37: 443, 1937.
- DILLEHUNT, R. B.: *Surg., Gyn. & Obst.*, 61: 96, 1935.
- GREEN, W. T.: *J. Am. M. Ass.*, 105: 1835, 1935.
- STONE, S.: *Am. J. Dis. Child.*, 64: 680, 1942.
- HUTTER, C. G. JR.: *J. Paediat.*, 32: 522, 1948.

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## CLINICAL and LABORATORY NOTES

### A METHOD FOR DETERMINING THE PATENCY OF A SPLENO-RENAL ANASTOMOSIS\*

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The work of Blakemore and Lord<sup>1</sup> has stimulated a renewed interest in the treatment of portal hypertension by means of anastomosis between the portal and caval venous systems. One of the procedures is to make a spleno-renal anastomosis, and its success is judged by the subsequent clinical course. The postoperative cessation of haemorrhage from oesophageal or gastric varices and the reduction of ascites, are generally regarded as indicative of a patent anastomosis. It has been observed, however, that a temporary improvement from splenectomy alone may occur, since as much as 40% of portal vein flow may be received from the splenic vein.<sup>2</sup> Furthermore, the thrombocytopenia which is a factor in the bleeding tendency is at least temporarily relieved by splenectomy.

The purpose of the present case report is to describe a method by which the patency of the anastomosis may be determined.

#### CASE REPORT

J.D., female, aged 8 years. This patient was admitted to the Children's Memorial Hospital, Montreal, on January 18, 1948 (service of Dr. D. E. Ross) with a four months' history of frequent epistaxes, and loss of weight, strength and colour. She was a well-developed and well-nourished child, and the only remarkable physical finding was the gross enlargement of the spleen which formed a firm mass with a well-defined edge, extending 5 cm. below the left costal margin in the mid-

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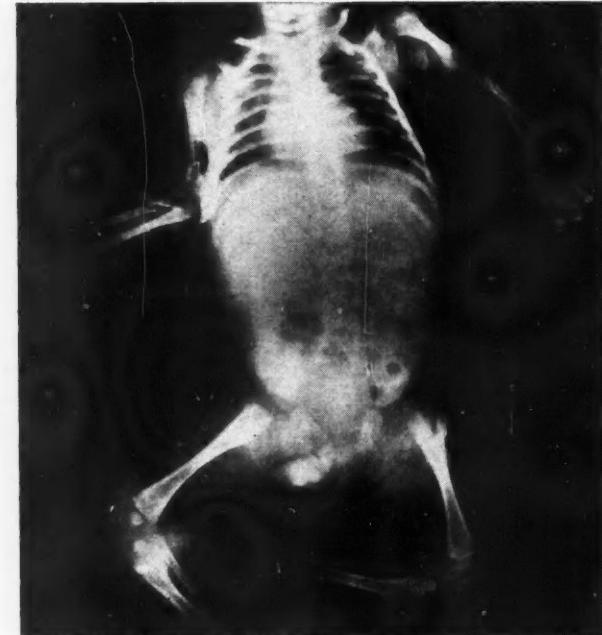


Fig. 1.—X-ray shows foci evident in the left femur, right ulna, right tibia and right femur.

tive but Wassermann test was done on the infant, his mother and father. All were reported negative. At this time aspiration of the right knee presented greenish pus that cultured *Staph. aureus*. This was on June 30.

By July 9, regardless of continuous therapy, augmented by two blood transfusions, the condition was progressing and the child again became febrile to 104.5° rectal temperature. On July 15, x-ray indicated advancement of all lesions and a lesion in the upper end of the shaft of the right ulna. There was also a subcutaneous abscess over the right 7th costochondral junction. Aspiration of this gave green pus similar to that in the right knee. July 19, the temperature fell rapidly, the infant failed noticeably and expired on July 21, on its 79th day.

Blood counts at intervals during the disease presented the usual picture of secondary anaemia. Urinalyses were negative repeatedly. Autopsy was performed 3½ hours after death. It showed acute osteomyelitis of lower end of right femur, upper end of right tibia, upper end of right femur, upper end of left humerus. Acute suppurative arthritis of right knee, left shoulder, left hip, right hip (*Staph. haemolyticus*). Abscess of the

clavicular line. Three months prior to admission, she showed the following blood picture: haemoglobin 7.4 gm.; red blood cell count, 2.7 million; white blood cell count, 8,500, of which 6,970 were polymorphonuclears and 1,445 were lymphocytes; platelets, 100,000. On admission, after three months of iron therapy, the haemoglobin level had risen to 13.8 gm.; red blood cell count to 4.5 million but there was still a lymphopenia; the white blood cells were 5,700 with 4,760 polymorphonuclears and 728 lymphocytes, and a thrombocytopenia, the platelets numbered 30,000. Plasma total protein, albumin globulin ratio, cholesterol, bilirubin, thymol turbidity and bromsulfalein clearance tests were all normal. X-ray examination demonstrated large oesophageal varices as high as the left main bronchus.

A diagnosis of portal hypertension with Banti's syndrome was made, and a laparotomy performed through a high transverse incision. The spleen was four to five times normal size and there were many adhesions to the posterior abdominal wall and the diaphragm. The spleen was removed. Care was taken to preserve the splenic vein which was about 4 mm. in diameter. Bleeding from the end of the splenic vein was free and forceful and obviously under increased pressure. The pressure in the portal vein measured 250 mm. of water, which was regarded as an indication of intrahepatic portal obstruction, since normal portal pressure (in adults) should not exceed 100 mm. of water.<sup>3</sup> The left renal vein was exposed and an end-to-side anastomosis of the splenic vein into the renal vein was performed by the suture technique. The patient was ambulatory on the 7th postoperative day.



**Fig. 1.**—The catheter has been introduced into the left renal vein. The duodenal tube lies in the third portion of the duodenum.

It occurred to us that if the anastomosis were functioning, a substance which is freely absorbable from the duodenum and which enters the portal system via the mesenteric veins, should be found, early in its absorptive curve, in greater quantity in the left renal vein than in either the peripheral veins or the inferior vena cava below the site of entry of the left renal vein. Glucose appeared to have the desirable characteristics of being non-toxic, rapidly absorbed, readily estimated quantitatively, and passing directly from the duodenum into the portal circulation.

The following procedure was adopted. A duodenal tube was introduced so that its tip lay in the third portion of the duodenum. Heart catheterization was then performed.<sup>4</sup> The cathe-

ter was introduced in the left median basilic vein and passed through the right auricle into the inferior vena cava, to the level of the 1st lumbar vertebra, where it passed to the left into the left renal vein<sup>5</sup> (Fig. 1). Fasting samples of blood were taken from a hepatic vein, left renal vein and inferior vena cava. Ten minutes after the introduction of 100 ml. of 10% glucose through the duodenal tube samples were withdrawn from the left renal and right cephalic veins. Twenty minutes after the glucose administration, further samples were taken at these sites, and from the inferior vena cava at the level of L4. The glucose content of the blood samples was determined by the Folin-Wu colorimetric method using an Evelyn colorimeter, and the following results were corroborated by the Hagedorn-Jensen method.

#### BLOOD GLUCOSE LEVELS—MGM./100 ML.

	Fasting	10 min.	20 min.
Hepatic vein .....	85.5	—	—
Left renal vein .....	69.0	166.0	170.0
Inferior vena cava .....	72.0	—	158.0
Median cephalic .....	—	150.0	164.0

It will be noted that in the fasting state the renal vein sugar level was slightly lower than the vena caval level, while the hepatic vein blood sugar was considerably higher. Following the absorption of glucose from the duodenum, there was a consistently greater sugar content in the left renal vein blood than in either the vena caval or peripheral samples.

These findings suggest that some blood from the portal circulation is entering the left renal vein and, therefore, that the spleno-renal anastomosis is functioning.

#### REFERENCES

1. BLAKEMORE, A. H. AND LORD, J. W. JR.: *Ann. Surg.*, 122: 476, 1945.
2. *Idem: Surg., Gyn. & Obst.*, 84: 645, 1947.
3. TOCANTINS, L. M.: *J. Am. M. Ass.*, 136: 616, 1948.
4. COURNAND, A. AND RANGES, H. A.: *Proc. Soc. Exp. Biol. & Med.*, 46: 462, 1941.
5. WARREN, J. V., BRANNON, E. S. AND MERRILL, A. J.: *Science*, 100: 108, 1944.

The needs for salt and for water are closely interrelated. A liberal allowance of sodium chloride for the adult is 5 grams daily, except for some persons who sweat profusely. The average normal intake of salt is 10 to 15 grams daily, an amount which meets the salt requirements for a water intake up to 4 litres daily. When sweating is excessive, one additional gram of salt should be consumed for each litre of water in excess of 4 litres daily. With heavy work or in hot climates 20 to 30 grams daily may be consumed with meals and in drinking water. Even then, most persons do not need more salt than usually occurs in prepared foods. It has been shown that after acclimatization persons produce sweat that contains only about 0.5 gram to the litre in contrast with a content of 2 to 3 grams for sweat of the unacclimatized person. Consequently after acclimatization, need for increase of salt beyond that of ordinary food disappears.—*Nutrition Reviews*.

**THE CANADIAN MEDICAL ASSOCIATION****Editorial Offices—3640 University Street, Montreal***(Information regarding contributions and advertising will be found on the second page following the reading material.)***EDITORIAL****CANCER RESEARCH**

NO single problem in medicine is being studied more intently than is cancer; but it is difficult for medical practitioners to follow cancer research with any degree of completeness and a recent paper by Dr. R. R. Spencers,\* formerly chief of the National Cancer Institute is of value in bringing some of the main points into focus.

We have learnt much about the many factors which may be responsible for starting cancer—the “causal genesis” in Ewing’s phrase. These are manifold and of great complexity; injection of chemicals, x-rays, radium and ultraviolet rays, diet, genetic manipulations in breeding, etc. Certain other points have been well established. The variety and number of inciting causes, already mentioned; that mammalian cancer cells are derived from normal cells, and that certain “precancerous” conditions such as papillomas and leucoplakia exist, although no sharp line of division can be drawn between precancerous and cancerous processes; that cancer cells are not supplied with nerves from the host, although they do draw an abundant blood supply therefrom; that a greater variety of species is subject to the carcinogenic process than to any other disease but each cancer is species specific; that cancer is peculiar to organized multicellular forms, it is not a “universal cell potentiality” since it cannot manifest itself in a single cell species. But the essential nature of cancer itself is still obscure. We can initiate cancer, but after we have started the process (and the inciting agent is not necessarily essential to carry it on) what happens in the cell to transform it permanently into a cancer cell? That we do not know. All that can be said is that the cells affected by the causes mentioned become parasitic on the mother organism. Dr. Spencer uses the simile of these cells being traitors from within; whereas, in communicable

diseases the invasive cells (bacteria, protozoa, viruses) are gangsters attacking from outside.

There are certain unique qualities in cancer. The same causative factor seldom produces similar results in different organs. Azo dyes for instance will only induce cancer of the liver when fed to rats and mice, and such chemicals as chloroform and carbon tetrachloride also induce cancer of the liver but not of other organs. The influence of heredity also may be exerted only within very narrow limits. Nutritional factors are so variable that general conclusions cannot yet be drawn.

Indeed the very problem of cancer is unique. It involves many other questions: problems in cell division; in metabolism; in regeneration; in the differentiation and organization of tissues. Consequently it has created widespread interest amongst non-medical investigators, and serves to activate many other fields of biology. The cancer process is basically a problem in growth, and this immediately leads into almost every field of biology. So that the funds for the study of cancer are found supporting research in botany, genetics, viruses, enzymes, nutrition, bioassay work, physics, clinical investigation, to name only a few.

One aspect of cancer research is that even though a given investigation may not yield the results aimed at, it may lead to other highly important findings. Dr. Spencer quotes an instance of this in his own researches. He and his associates were studying the effect of cancer-inducing agents on single cell species over long periods and for many generations. The permanent morphologic changes looked for were not obtained, but valuable principles in the mechanism of cellular adaptation to unfavourable environments were established. For one, continuous exposure to what was apparently harmless to individual organisms and cultures would be fatal in time to the species. Whereas, discontinuous and alternating exposure to the same conditions resulted in survival and adaptation. Also it was found that the ability of organisms to resist unfavourable environments was a function of their age or maturity. What may be to the best interest of the individual may not be to the best interest of the race or species. Perhaps the first law of nature is preservation of the race rather than the individual.

\* J. Am. M. Ass., 137: 1361, 1948.

**MEN and BOOKS****THE INDIANS OF THE MARITIME PROVINCES, THEIR DISEASES AND NATIVE CURES\*****Arthur F. VanWart, M.A., M.B., L.M.C.C.***Fredericton, N.B.*

The Indians of the Maritime Provinces before the arrival of the white man were grouped in small tribes and had very little communication with the outside world. They had no written language and their knowledge was handed down by word of mouth. As a result the medical practices of the Maritime Indians differed in many respects from those of the Indians in other parts of Canada, as is seen in the treatment of scurvy. Jacques Cartier's men while wintering at Stadacona fell ill with scurvy and were cured by a decoction made from a tree called "annedda". Lescarbot writes "As for the tree called 'annedda', mentioned by the said Cartier, the savages of these lands (Acadia) know it not". Different roots were used by different tribes to treat similar diseases, each tribe having its own remedies.

The Indians believed that every illness that could not be connected plainly with a visible influence was unnatural and due to evil influences. The disease might be due to a malevolent spirit which assumed material form and attacked the victim or it might be due to a spirit or object supernaturally injected into the person which acted at the suggestion of a human enemy who possessed supernatural powers. Diseases also might be caused by the angered spirits of the dead, or those of animals, plants and other natural objects. These beliefs determined their methods of treatment and prevention of disease. Referring to the Maritime Indians Lescarbot writes:

"For they have courage, fidelity, generosity and humanity and their hospitality is so innate and praiseworthy that they receive among them every man who is not an enemy. They are not simpletons like many people over here (Europe): they speak with much judgment and good sense."

There were two classes of physicians one the "mystery man" and the other "maker of medicines". The nearer the Atlantic coast the more prominent was the quasi-practical use of herbs without ritual. Remedies were single herbs which had a direct effect on the system. They frequently were discovered by accident. A herb which had an astringent taste was assumed to give the same effect on the stomach when taken internally. Indians used taste extensively in judging quality.

When medicines failed the mystery man was called upon to remove the spirit and apply his secret remedies. The mystery man before being accepted by a tribe had to demonstrate his power as a healer. Healing was a combination of songs, prayers, and the usage of one or more powerful fetishes. Over the most painful spot he would suck hard to extract the immediate principle of the illness and by sleight-of-hand he produced the offending cause in shape of a thorn, pebble, hair, etc., which was then thrown away. A medicine was given and a protective fetish left. Mental influence over the patient was exercised to the fullest extent. If he failed a witch or wizard was given as the cause of the disease and somebody designated as the culprit. The culprit's life then was in danger. If the mystery man lost several patients his own life was taken.

The herbalist doctors administered or taught the women of the tribe to make and to administer liquid and dry medicines. They also bled patients, operated upon ulcers, swellings, wounds, used manipulations, sweating, poulticing, scarification. Although they were aware that certain plants, roots, etc., would produce a definite effect upon the human system, they attributed any benefit to the fact that the remedies were distasteful and injurious to the demons in the system to whom the disease was attributed. The parts of plants used were roots, twigs, leaves or bark but rarely flowers or seeds. They were used commonly in the form of a decoction, a cupful in the morning. The bark was usually taken from the east side of the tree. The root or branch was used that ran towards the east, the reason being these had more medicinal potency from the rays of the sun. The use of herbs and the medicinal applications were essentially practised without conjuration or jugglery and their lore was developed by seeking resemblances between the objective and the means. The shape of an object was important, e.g., worm root, (*apocynum cannabinum*) with worm-like stem was given as a vermifuge and snake root (*aristolochia serpentaria*) was used for fits on account of its contortions. Ritual and mythical associations were discarded as they found agents whose properties they had correctly learned. The knowledge of plants and trees among young and old, their ability to identify them, and acquaintance with their properties was quite remarkable. The preparations of herbs were not secrets of the shamans but were known to all the tribe. They were usually prepared and administered by women. Some old women from experience with their children and grandchildren were regarded as expert herbalists. A seventh son of a family was believed to be gifted with a knowledge of medicine and healing powers.

The Indians had many practices which they used to prevent disease. They carried amulets and charms to protect themselves from accidents

\* Read at the Seventy-ninth Annual Meeting of the Canadian Medical Association, Section of Historical Medicine, Toronto, June 24, 1948.

and to keep themselves well. Dried snake's tongue was considered an excellent charm against toothache. Lescarbot states: "the savages use sweatings every month and by this means they preserve themselves, driving out by sweat all the cold and evil humours they might have gathered." Sweat baths also were used to break up a fever. The sweatings were taken in the following manner. A sweat house was built like a wigwam covered with barks or skin of beaver or moose, inside were placed hot stones to make the occupants sweat. Water was thrown on the stones and the steam fell on their backs like hot burning rain, then they rushed into the river to cool themselves. A feast followed after which they dieted. They lived almost eight days by smoking tobacco. When starving they took no exercise whatever. When hungry they returned to hunt. If they had no success hunting they starved themselves for many weeks, keeping up on the tobacco they smoked. Its biting taste gave warmth to their stomachs. Four to five good meals were needed to restore them from starvation and fatigue or from the weakness of several months' illness.

They believed that dancing was profitable for the preservation of their health. They used massage, rubbing the whole body with seal oil so as to withstand the heat and cold. The hair was kept slippery so that it would not catch in the branches of the trees. The rain and storm thus did not injure their heads but glided to their feet. The mosquito did not sting the bare skin massaged with the seal oil. The skin of the adult Indian was generally healthy and supple up to the time of senility. The men had no beards.

They partook of many decoctions to prevent disease. Twigs of ground hemlock (*Taxus minor*) or white spruce (*Picea Canadensis*) were steeped to make a kind of tea which served as a beverage. The benefits felt from these beverages were probably antiscorbutic. The leaves and stems of meadow beauty (*Rhexia Virginica*) vinegar wood were made into a brew for cleaning the throat and were used as a sour drink. Sweet flag (*Acorus calamus*) or muskrat root (*Iris versicolor*) was steamed in the house to keep away disease. The root was chewed for the same purpose. Bits of blood root (*Sanguinaria Canadensis*) dried and strung together into a necklace were worn to prevent bleeding. Bark of the elder (*Sambucus Canadensis*) by scraping it upward from the stem was used for an emetic and downwards was used as a physic. Acorns of white oak (*Quercus alba*) were eaten to induce thirst since it was thought to be beneficial to drink plenty of water.

Lescarbot writes:

"That which seemeth unto me most worthy of wondering is the nakedness of those people in a cold country, wherein they delight even to harden their children in

the snow, in the river, and among the ice. Which also hath been their chiefest strength in the conquests they have made."

The Indians had a great feast or tobagie after an animal was killed and it continued until the whole animal had been eaten. It was a sacred duty to eat all that was provided. They did not store up food in any quantity for the long hard winter months. They ate the meats of moose, deer, caribou and bear, otter, beaver, porcupine, partridge, wildgoose, teal, ducks, wild pigeons, rabbits, snipe, cod, salmon, bass, trout, smelt and many other fish and waterfowl. They lived on shellfish such as the clam when not hunting. They were fond of mussels, scallops, clams, crabs and lobsters, the eggs of geese and ducks. They ate beaver only in the winter. The tail is the best and most delicate part. They did not feast on more than one kind of meat at a time. They were fond of the grease of the moose and drank it wholly pure. They made cakes of tallow of the grease and ate it raw. The bones of the legs and thighs of the moose after the marrow was eaten were pounded and crushed until they were reduced to a powder, the fragments were placed in a huge kettle of boiling water, so that any remaining trace of marrow or grease floated upon the surface of the boiling water. The grease was collected and preserved. The soup became as white as milk and they drank it as it was good for the chest. They valued the male in the summer and the female moose in winter. If the female was pregnant they drank the liquor amnii. The heart, kidneys, tongue, entrails and most of the fat they relished. The intestines were cleaned, made into rolls, like puddings and sausages. These were cut into slices and dried in smoke to prevent the meat from spoiling. They smoked the nose and tongue of the moose which were wonderfully good but were better when fresh. They drank pure water. They drank melted snow in winter and also the sap of the maple in spring. They ate strawberries, raspberries, blue berries, gooseberries, apples, Indian corn, beans, pumpkin and the Mic Mac potato or Chiquebi root (*Apios tuberosa*). The latter grew deep in the earth and the bulbs were connected by a slender thread. They grew readily near oak trees. Grape and wild vines ripened in season on Saint John River but the Indians did not eat the grapes. The hickory, beech and hazel nuts were eaten.

The Indians did not like salt. There was no diet for the sick, the food being indifferently prepared and the patient given whatever food or drink he desired. When starving in the winter they would feed on bark of trees, shellfish and on the parings of skin of their dogs or even eat their dogs. They did not eat wolf. The Indians were not cannibals but LeClerq mentions an unusual incident where a father and mother during a period of starvation killed

their two children, cut them up and ate them after stewing them in a cauldron.

The Indian women were well built, lived an outdoor life, were healthy, strong, very patient and bore children well, a very large proportion of whom were normal. She walked or stood up until the last stage of labour. Delivery took place while the woman was squatting on her knees or on her hands and knees or elbows, only occasionally lying down. She might hold on to an attendant, usually another woman, or a sash, strap or stick which was fastened nearby for the purpose. Pressure was made on the abdomen by kneading with the hands or with a binder. After birth the perineum was washed. She rested one day and was up on the second day. No secrecy surrounded the delivery. In difficult cases the mystery man attempted external manipulation. A binder was tied about the mother's and also the baby's abdomen after childbirth to facilitate healing and to prevent excessive bleeding. After childbirth a strong bitter decoction was given to the mother to cleanse her. This was made from the leaves of yellow ash (*Fraxinus Americana*). Confinements usually lasted about 2 hours. The newborn baby was given fish oil or melted animal tallow after bathing, and made to swallow it before being given anything to drink or eat. The babies were breast-fed and slept most of the time. The mother was the only one permitted to nurse the baby. When food was started the mother chewed the meats, etc., into small pieces and fed them to the baby. The baby was wrapped in a beaver fur tied with a swaddling band to an even smooth board, which they carried on their backs with the feet hanging down. In the cabin it was set straight up against a stone. The upper part of the board was decorated with feathers, etc. Children had natural patience, learned by memory or imitation rather than by reason. They played in groups. The menses did not begin before 12 years.

The diseases of the Indians were due to exposure, weather, hardship, famine and injury. Eye diseases due to smoke in the houses, which had only a hole in the roof, were common. Measles, scarlet fever, diphtheria, chicken-pox, smallpox, typhus, typhoid, malaria, yellow fever, tuberculosis, venereal disease were introduced by the white man. Palsy, dropsy, gout, rheumatism, stone, gravel, gall colic, asthma were absent among Indians early travellers noted.

Scurvy was the most prevalent disease among the Indians in the winter season during the period of famine. It was due to the lack of food as well as the use of improper food. The winter supply consisted of corn, roots and herbs supplemented by hunting and fishing in some sections. It was noted that after the coming of the white man the Indian began to be more and more dependent on the white settlements during

the period of famine, and scurvy was much more severe among them. The hunting and active life seemed to make the scurvy less severe. The following quotation from Champlain is very interesting: "Of all Sieur de Mont's people who wintered first at Ste. Croix only eleven remained well. These were a jolly company of hunters who preferred rabbit hunting to the air of the fireside, skating on the ponds to the turning over lazily in bed, making snowballs to bring down game to sitting around the fire talking about Paris and its good cooks". Thirty-six of those stricken with scurvy died, and 40 recovered with spring.

The Indians of some areas used the sassafras tree as a scurvy preventive but this tree does not grow in the Maritime Provinces. An excellent description of the claims for the sassafras and sassafras boom of the early 1600's is found in Frank H. Lamb's *Book of the Broadleaf Trees* (pp. 330-335). In New England on the seashore is scurvy grass (*Genus cruciforæ*, species *Cochlearia officinalis*) which was used by whites to treat scurvy and the knowledge may have come from Indians. Both the spruce and hemlock trees grow in the Maritimes but the exact tree which was called the annedda is not known but was probably a spruce or a hemlock. Annedda probably means evergreen. The bark and leaves of the annedda were boiled together, the decoction was drunk every second day and the dregs were placed on the legs which were sick from scurvy. Another scurvy decoction was made from the tops of spruce, well bruised and put in a large tub and covered with boiling water for twenty-four hours and stirred frequently. Lescarbot states: "that young buds of herbs in the springtime were used before garden products were raised to restore them and to comfort their weak stomachs".

Cholera was treated with the root of sweet flag (*Acorus calamus*). It was their belief that the root would cause meagre excrements in man as it did in the muskrat. For diarrhoea they drank the steeped bark of chokeberry (*Prunus Virginiana*) "bitter berry wood". Wild chocolate (egwitkewe) would stop diarrhoea gradually though not suddenly. Pipe stem wood (alder) was a good physic when boiled and mixed with the fat from any part of the porcupine.

Slippery elm (*Ulmus fulva*) bark was used for bleeding lungs. Its slippery quality smoothed down the irritated throat and lungs. The colour of blood root (*Sanguinaria Canadensis*) suggested its use to prevent bleeding. The pitcher plant (*Sarracenia purpurea*) "Whippoorwill moceasins" was steeped and drunk for spitting of blood and for kidney trouble. A tea made from white pine was used in any kidney or urinary trouble. White oak (*Quercus alba*) bark was steeped and drunk for bleeding piles. Weak running ground plants (*Lycopodium* and *Taxis minor*) were sought as antipyretics be-

cause weakness and fever were usually associated with each other. Poplar (*Populus tremuloides*) "bitter wood" bark was steeped for colds. It produced a sweat. Tea of hemlock bark and of the bark, needles and twigs of white pine were used for colds, coughs and la grippe. Black cherry (*Prunus serotina*) bark was steeped and drunk for a cough. The berries were steeped to make a bitter tonic. Sarsaparilla (*Aralia medicaulis*) root was dried and crushed to a powder and was steeped with sweet flag (*Acorus calamus*) for cough. Staghorn sumach (*Rhus typhina* or *hirta*) was good for sore throat.

Pungent leaves of buttercup (*Ranunculus aceris*) when inhaled produced local inflammation and sneezing which provided a vent for the pent-up feelings of a headache. They believed that the urine from a porcupine bladder dropped into the ear and kept there by a plug would improve defective hearing. An eelskin was worn next to the skin in the area of pain, e.g., about the head in a headache. It was also used to prevent cramps and rheumatism. A frog was caught and buried alive, the headache was thus buried with it. Hiccoughs were relieved by suddenly distracting the patient's mind. Warts were removed by rubbing raw meat over them and then buried with the idea of transferring them to the earth.

Tobacco smoke was blown into the ear as a cure for earache. Skunk grease or a tea made from boiled sumach was poured in the ear to relieve an earache. Moosewood (*Acer pennsylvanicum*) from analogy was good for trouble with limbs. Fronds of brake (*Pteris aquilina*) from the stiffness of the leaf stalks came to be thought of for weak babies and for old people. Cedar (*Arbor vitæ*) "brittle wood" leaves were made into poultices for swollen feet and hands. Mash made of leaves of cow lily (*Nymphaea advena*) "big one side" or from water lily (*Castalia odorata*) "little one side" was used for swelling of the limbs. High-bush cranberries (*Viburnum opulus*) "flat seed berries" were steeped and drunk for swollen glands. Alder (*Alnus sp.*) bark boiled in water stopped cramps and retching. Lady's slipper (*Cypripedium acaule*) "many fine roots" was steeped as a medicine for nervousness. A split open toad put over a rheumatic pain was thought to expel it. Scarification for pain was based not only on the principle of counter-irritation but also on the idea of making an exit for pain. Scarifiers were pieces of flint, goosequills, hardwood sticks and basket gauge. Blood-letting was practised by opening the veins with flint stones. A counter-irritant was made by burning a combustible vegetable fibre in contact with the skin. It was known as a moxa. Sweet fern (*Myrica asplenifolia*) "ant wood" leaves steeped and rubbed on the skin would cure effects of poison ivy. Jack-in-the-pulpit (*Arisaema triphyllum*)

"jug woman's baby" was steeped to make a liniment for external use. Its liquid is a poison.

Near Canso, Maine, was found a water to contain very powerful healing powers. This spot was visited by people from all parts of the country. The visits continued until after the white man came.

Tobacco was considered a manna from heaven, a cure. When the person was unable to smoke he would die. Drownings were quite common and the following treatment is recorded. The paunch of some beast or a large long gut was filled with tobacco smoke, one end tied, the other tied to a tobacco pipe, the free end of the pipe was inserted into the fundament of the drowned man and by pressing the gut the smoke was driven through the pipe into his body, then they hung him up by his feet to a tree and the smoke made him east up all the water he had swallowed and brought him to life again.

Their knowledge of anatomy was gained from the animals killed in the chase and used as food. Wounds were given close attention and frequent washes made to keep them clean. The ritual of treatment was constantly present as is shown in the following incident. The French were approaching the shore to land their barques when the savages rushed out in the water to greet them. One Indian severely hurt his heel on the edge of a rock but the natives would not let the French surgeon attend him until they had completed their ritual. The French surgeon bound his heel and the Indian went away. Two hours later he returned, the most jocund in the world, his head wrapped with the dressing as it seemed more gallant.

Surgical procedures consisted of the treatment of fractures and superficial wounds and the mechanical means of curing consisted of bandaging, bonesetting, cauterizing, counter-irritation, cupping by sucking with mouth or by an animal's horn with the medicine man sucking at one end, cutting, poulticing, scarifying and venesection. Contused wounds and bruises were treated by the application of cold fomentations from springs and running streams. For cuts, axe wounds, burns and sores, the balsam of fir (*Abies balsamea*) was chewed and the water spat upon the affected part and a poultice made of the remainder. The use of spruce gum and balsam sap on scabs, sores, etc., originated from the analogy in the belief that from the scabs and sores of a certain mythical being the gum and sap of the conifers originated.

Incised wounds were closed with sutures made of the inner bark of certain trees or the tendon of the deer. They were removed after several days. A wound after being sucked and licked sometimes had a slice of beaver's kidney placed upon it and thus was healed. Tea from the bark of the white spruce made a good salve. Beeswax was applied to severe cuts, then removed

and tallow applied. Juniper gum healed cuts very quickly.

For suppurating wounds the bark of slippery elm (*Ulmus flava*), basswood (*Tilia*) and the resinous bark of tamarack (*Larix Americana*) was used. To ulcers the underbark and juice of juniper berry (*Genus juniperus*) was applied. Festers were covered with alder leaves or bark. Splints of cedar were applied to fractures padded with leaves or grass and the limb bound by pieces of young birch (*Genus betula*). Splints were also made of reeds or the bark of trees and fastened to the broken bones with bandages. This prevented movement of the fragments and in a great degree the contraction of the muscles with the consequent shortening of the limb. Dislocations were reduced by main force and by a rotary method.

Amputations were performed at the joint with knives of flint, spouting vessels were seared and haemorrhage arrested by stones heated to redness. Haemorrhage was also treated with applications of drying powders of vegetable origin. The powder was pressed into the wound and retained with a bandage. Red willow or leaves of pigeon berries chewed up fine and placed on a fresh cut wound would stop bleeding.

The Indians were free of many of the white man's worries, they took small care of the commodities of life. They had no ambitions which filled them with cares and frettings, they had no suits in law. They were indifferent to many things which the white man considered important. After killing an animal they would simply rub their dirty hands through their hair and proceed to eat the food. Their cabins were very dirty not only from the smoke of their fires within but from the skins lying about. Nevertheless they lived to be 70 or 80 years of age, were happy and endured their trials with fortitude. When a person died the family changed their cabin.

The Indian system of medicine failed on contact with the white man. With the introduction of fire-arms the hunt became more deadly causing their food supply to be seriously diminished and made them rely more and more on European foodstuffs. European foods tended to unbalance the diet of the natives causing and facilitating the spread of disease. Biard in 1616 gives an account of the deterioration of the Maritime Indian due to contact with the white man, a tragedy in Canadian history.

**NOTE.**—A more detailed bibliography has been prepared by the author and may be had on request.

#### REFERENCES

1. BIGGAR, H. B.: *Voyages of Jacques Cartier*, 1924. (Publication of Public Archives of Canada No. 11.)
2. LESCARBON, M.: *Nova Francia, a Description of Acadia* 1606, translated 1928.
3. BAILEY, A. G.: *Conflict of European and Eastern Algonkian Cultures 1504-1700*, 1937.
4. Handbook of Indians of Canada, Vol. 1, 1913.
5. Indian Medical Exhibit of Division of Medicine in U.S. Natural Museum by Charles Whitehead, No. 2582. From Proceedings of the U.S. National Museum.
6. HEAGERTY, J. J.: *Four Centuries of Medical History in Canada*, Vol. 1, 1928.
7. SPECK, F. S.: *Proceedings of 19th International Congress of Americanists*, Washington, 1915.
8. GANONG, W. F.: *Le Clercq, C.—New Relation of Gaspeia*, translated 1910.
9. Jesuit Relations, Vol. 2 and 3, translated 1897.
10. Bureau of American Ethnology, Bulletin 34, 1909.
11. BIGGAR, H. P.: *Samuel De Champlain's Works*, Vol. 1, translated 1922.
12. American Anthropologist, Vol. 24. The Micmac Indians, 1922.

## MEDICO-LEGAL

### Responsibility for Sponges\*

In May of 1947, at the parents' request, the defendant doctor made arrangements to perform a tonsillectomy on a 5½ year old child. The operation was performed in the hospital under the conditions usual in that hospital. In the examination on discovery it was stated by the operating room nurse, by the anæsthetist and by the defendant doctor that at the end of the operation the doctor asked the anæsthetist if he had seen all the sponges removed from the throat. The anæsthetist stated that he had been busy and did not notice, whereupon the doctor felt in the posterior naso-pharynx and explored the area with a pair of artery forceps. No sponges were found. The patient was taken from the operating room in good condition and was visited in his own room some five minutes later by the doctor. Shortly thereafter the nurse who was watching noticed some cyanosis which became more marked in the next ten minutes. Very shortly after that respiratory distress became extreme and the boy ceased to breathe almost immediately. At that time a senior nurse, called by the nurse who was in the room, removed a small gauze sponge from the throat, but in spite of artificial respiration, oxygen, and stimulants, recovery did not occur.

Very shortly after the child's death the parents instituted action against the surgeon to enforce a claim for damages. The case came to trial early in May of 1948, in the Court of King's Bench, Winnipeg, before Mr. Justice Campbell. At the end of the trial judgment was reserved and was delivered in September, 1948.

In his judgment Mr. Justice Campbell summarized the facts of the case as they had been brought out in the evidence. He found, first, that no blame could be attached either to the hospital or to its staff. With respect to the doctor, Mr. Justice Campbell said:

\* Anderson vs. Dr. W. E. Chasney and The Sisters of the Order of Saint Joseph of Toronto for Manitoba.

"The position of the doctor is somewhat more difficult to define. He had performed more than 200 operations of this kind without misadventure. He had assisting him an anaesthetist and the usual number of nurses in the operating room. The doctor himself was the only one who had inserted and removed sponges. As mentioned, he used the type without strings attached. No count of sponges was asked to be made by the doctor, and none was made.

"After the patient was discharged from the operating room and returned to his ward, the doctor visited him in his ward, when the patient appeared to be normal. The doctor was aware that the nurses in charge of the patient knew their duties. It was shortly thereafter that the patient stopped breathing and a sponge was removed from the lower part of his throat.

"It was agreed by all the doctors who gave evidence at the trial that the presumptive diagnosis of death was asphyxia or suffocation. The defendant doctor in his evidence described and explained the search he made in the back of the naso-pharynx cavity; that before searching he had enquired from the anaesthetist if all the sponges had been removed and received the reply that the latter did not know because he had been engaged in other duties. Thereupon the defendant had made his own search and satisfied himself and believed that he had removed all the sponges, including the one which caused the damage.

"Other medical evidence was to the effect that it is difficult, if not impossible, to detect a sponge in the naso-pharynx cavity after it has become soaked with blood and mucus. This evidence must be accepted.

"Plaintiff's counsel in argument said that, notwithstanding the medical evidence adduced at the trial for the defence, it was the practice of some doctors in some other hospitals in Winnipeg to use sponges with strings, but that he was unable to induce any member of the medical profession to say so. The Courts are dependant upon the medical profession for evidence of the proper routine and technique. These are matters upon which the Court must be informed by proper expert evidence, and it is only on such evidence that the Court can decide whether the defendant surgeon had exercised that degree of care and skill, which in the opinion of experts in such matters, is necessary.

"It is well settled that a surgeon's duty is only to be reasonably skilled in the art which he professes and to be careful in the exercise thereof. He is not required to be as skilful as the most eminent member of his profession, but only to be as skilful as a normally skilful member of it. He must also be careful; but

the standard of care which the law requires is not insurance against accidental slips. Applying this standard to the present case, the question is not only: Was he negligent; but was he shown to have been negligent by the evidence of anyone who was competent to judge?

"The law and the evidence is clear. The onus is on the plaintiff; he must prove negligence by the evidence of someone competent to judge. This is not a case of *res ipsa loquitur*: see Mahon vs. Osborne, (1939) 1 All E.R. p. 535; Fish vs. Kapur, (1948) 2 All E.R. 176. The Plaintiff can not ask the Court to reform the practice in performing these operations.

"The issue then narrows down to two points: (1) Was the proper technique used? (2) Was there a reasonable and sufficient search made after the operation?

"On the first point, the only medical evidence adduced at the trial was that this operation was performed in the same manner as other surgeons perform it; that they make the same kind of search at the end of the operation. I therefore am unable to find that Dr. Chasney was negligent because he did not use sponges with strings attached. There was no evidence before me that is ordinary or even good practice. There was no evidence that it is necessary practice or safer than the practice usually adopted.

"On the question of counting sponges, the evidence of the doctors was that this is not customary; that it is not considered practical, and that it is not done. In these matters the Court cannot substitute its judgment for that of medical experts. There is clear and corroborative evidence that a search was made.

"It is impossible to find that there was negligence on the part of the surgeon or that he did not possess average skill or that reasonable search was not made.

"The action of the plaintiff is dismissed against both defendants with costs if asked for."

T. L. FISHER, M.D.,  
Sec.-Treas., Canadian Medical  
Protective Association

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Comel, in the preface to his treatise on the physiopathology of the human skin, with the deep thinking of a philosopher and the lyricism of a renaissance writer, calls the skin the monumental façade of the human body, telling the age, the peaceful or calamitous past, the effeminate or virile character, the constitution, etc., of its bearer.

The hands are an important part of this revealing façade. They may record what the face may conceal. The warm and dry, the cold and clammy handshake, the clasping and twisting and biting of one's hands in an effort to control one's emotion, the opening of the hands in a state of peace and relaxation, the gesture in conversation or public speaking, all are revealing psychologic characteristics.—*Occupational Marks and Other Physical Signs*, by F. Ronchese.

## ASSOCIATION NOTES

### PRESIDENTIAL ADDRESS\*

C. A. Gauthier, M.D.

Quebec City, Que.

La coutume veut, qu'à la fin de son terme d'office, le président sortant de charge fasse, en cette assemblée annuelle, certaines remarques et qu'il les offre à la pensée et à la critique de ses confrères.

L'importance de ce geste et l'honneur attaché au poste sont raisons suffisantes pour se conformer avec plaisir à cet usage.

Afin de ne pas prolonger indûment cette réunion, et parce que parmi nous, il serait bien inutile de me répéter dans les deux langues, je suis convaincu que de nul quartier ne s'élèvera opposition à ce que je continue mes remarques dans la langue anglaise payant ainsi tout autant tribut à nos confrères qui nous ont honoré qu'à nos compatriotes pour leur compréhension.

While you will listen to the different reports presented to you by the Honorary Secretary, the Honorary Treasurer and the Chairmen of the various committees, you will also undoubtedly realize that these gentlemen together with the chairman and the members of your executive committee, are the ones who have carried the real burden of the division's diversified activities during the past year. And all these activities are related to the evolution of medical science and to matters in general pertaining to the profession; but also, more and more do we notice the widening of the field and the truly social and economic aspects coming into the scope of the profession's considerations and thoughts. And so broad is now this field of investigation, that it would appear pertinent that we cast a bird's eye view on some of its aspects.

One of our past presidents, Dr. L. Gérin-Lajoie, made the following statement at this division's annual meeting in 1941: "Sickness has become costly, and yet one should not think of medicine as a luxury".

Seven years have not improved conditions and their effects are still more acutely felt. The population in general dreads the advent of illness, both for the illness itself and for its cost. Medicine has evolved, and diagnostic and therapeutic measures have attained a point where they are, in many instances, almost out of reach for a large proportion of the population. The people in general feel that, as far as health is concerned, they are insufficiently protected, hence one of the causes for the feeling of insecurity. It does not appear that they

will tolerate the situation much longer, but, on the contrary, that they expect and will demand a change. The cost of medical treatment and the people's feeling of insecurity have always been the subject of constant thought and study on the part of the C.M.A. and this Division.

True enough a certain proportion of the population will find a reasonable amount of protection through the means of the prepaid medical plans, rapidly growing in our province. The C.M.A. has deeply engaged itself in the study of these plans. Our Division has directly and indirectly been associated with these studies. It has gone on record as being in favour of these plans, and particularly so if the profession has some say in their administration.

Another large class of the population has also found security for the protection of its health. I refer now to the veterans. To the family doctor scheme for the veteran, to the structure and building of the schedule of fees to the co-operation with D.V.A. in maintaining the plan in good and satisfactory function, this Division has largely contributed both in study and in fact.

Very frequently involved in medical and surgical costs are matters related to hospitalization. Again in this field, the aspects are numerous and the related problems are complex. Your division is cognizant of them all and has in many instances expressed its views in the midst of the Association and in other quarters.

For instance, there has been for some time a good deal of discussion and study concerning the nurse's aids curriculum and activities in and out of the hospitals. The Association has been called upon to express opinion in that respect and although it has never been its policy to impose its views on anybody, it feels that, after all and always, the right people should be in the right place, this being conditional on the nature of the work implied and the degree of knowledge possessed.

Closely allied to the subject are also the matters of prerequisite qualifications and subjects of studies of the student nurses. Far be it from the Association's wish to dictate its ideas to any other organization; but the doctor's knowledge of the people's needs and of the psychological bias of human nature, has rendered him apt to be of a definite and decisive help in this question. Our Division has been particularly active in this field of study, especially through our Chairman, Dr. E. S. Mills, who has given to it a great deal of thought and time.

It is now a few years since Dr. Archer, speaking on subjects related to medical economics, said in substance;

"If we like our profession, if we believe in medicine, and if we have the courage of our convictions, we will

\* Delivered at the Annual Meeting of the Quebec Division, at Sherbrooke, Que., April 23, 1948.

do three things: first, we will continue to study all these matters; second, we will make our position known and understood, together with the reasons for our attitude; and thirdly, we will complete our organization and make it stronger."

Therefore it is with no small amount of pleasure and encouragement that we now see some medical schools definitely engaged in the teaching of medical economics, these lectures being coupled with those of medical ethics. Such a decision, dictated by the three above "ifs" has been most important and is far reaching in its effects.

And it has turned out to be a wise decision, because we are well aware of the fact that if the students in medicine are keen to possess a good and solid medical and scientific foundation, they have become also very anxious to be acquainted with the newer practical problems of economics, not waiting to face them, without preparation, for the first time, when they get into the practice of medicine. The interest they have manifested in this field is very encouraging, as much for the good of the population as for the benefit of the profession.

So, one could surmise that a somewhat different group of doctors, a group probably more "au courant et au fait", will launch itself into the practice of medicine. And, just as their elders did, they will become either general practitioners or specialists.

There has been, for the past few years, a more and more general tendency to recognize the most important status, the key position of the general practitioner: some sort of endeavour, I would say, to glorify its standing. That is all to the good, because we all recognize that there is the pillar of the practice of medicine. And the general practitioner should remain what he is supposed to be: an adviser, a mentor, a support, and a friend to the population. A very great amount of writing has been done, especially in the past two years, about the G.P. In some quarters there has even been some overemphasis. More recently, there was hesitation when it came to define the nature of the general practitioner. And while all this noise was made about him and his work, the "doctor" in general lent an interested ear, did not say much, and carried on, thus demonstrating anew his true personality and his deep understanding of the sense of duty.

On the other hand, in certain quarters, some concern has been expressed about the fact that some specialists, to whom certain matters had been referred did not seem to possess all the practical qualifications necessary for the happy solution of the above matters: this in the field of medical economics. Two comforting thoughts come to my mind in that respect: first, very often the general practitioner has stated that, to his regret, the burden of his medical practice does not leave him much time for other

problems. Next, very many of our specialists were once and for some time engaged in general practice. How, then, could these men suddenly, in changing medical status, lose the benefit of all their former experience in the field.

The problems involved are common to the two groups, and I believe, should be studied and solved by members from the two groups. That quality, this Division has always endeavoured to realize.

In our Province, all the doctors in medicine come under the jurisdiction of the College of Physicians and Surgeons. That body is legally invested with definite rights. This Division of the Association has been particularly careful not to encroach upon these rights, especially in matters pertaining to tariff in the provincial field. It is thought that these questions should be handled by a Committee of the College. It has been particularly thought so during this last year. Of course this Division of the Association could normally expect to be represented on such a committee, and would gladly co-operate in the interest of all concerned, because we are all convinced of the principle and of the fact that order includes the concept of liberty, and that the use of liberty must be realized in good order.

Considerable changes to the Medical Act as revised in 1941, have been made by the Provincial Legislature at the request of the College. The final copy of the amended law and by-laws of the College is not in our hands yet. It is felt however that no profound alteration has been brought about in the spirit of the former Medical Act. A new article concerning the certification of specialists and their control, is interpreted as a local reinforcement measure of the previously existing activities of the Royal College of Physicians and Surgeons of Canada.

Thus, one may realize that this Division of the C.M.A. has endeavoured to remedy the so-called failure of the individual practice of medicine. But has it really been such a failure? A short inventory proves that while complaints are increasing in almost every quarter, medicine goes on: longevity increases; morbidity decreases; contagion itself regresses; hospitalization is shortened; the mortality rate of many diseases has been lowered (let us only mention pneumonia and meningitis); early diagnosis is more and more advanced and widely spread; public education in matters of hygiene shows definite progress, the growth of children has made tremendous steps forward through surveys and education during the school age; and so on.

Is the failure here? We think not. But looking at it squarely, one wonders where lie the responsibilities when one hears complaints

about the cost of it all. Who are responsible for the tremendous increase in the cost of medication, dressings, hospitalization, instruments and all the physical appliances? Would it not be rather easy to complete the entire cycle of all participants? And would the doctors be part of this circle? In what proportion has he increased his fee? Or has he done it so much?

Some will claim that the failure is in the field of prevention. Well, is it? Has not the doctor sufficiently explained all the dangers to the population? Has he not given repeated warnings in many ways to every body concerned? Has he not suggested practical ways and means of prevention? But, if I may ask, who insists on hindering and even obstructing the application of much of this advice in the patients' families?

All these matters your Association and Division, have given thought to. Their complexity, altogether with the paradox of human nature, make us understand why solutions are not easily arrived at. And I would also say that the results, within our Division, are not as good and evident as they should be, and especially, since there is no local medium of information, no regularly published reports from our districts.

These handicaps might very well be the subject of careful scrutiny. Possibly, they could account to a certain extent for what has been for us the subject of a marked surprise and of a good amount of concern: namely that out of 478 complimentary members in the armed forces in this division carried in 1947, 198 only have found it advisable and worthy to continue their active and paying membership.

Before ending, I would like to quote a sentence by Mr. Churchill, in giving a toast to the Royal College of Physicians and Surgeons of London in March, 1944.

"As between the old and the new you have undoubtedly the advantage of antiquity. The College must play its part in keeping alive the historic traditions of the medical profession, and must ever foster those high standards of professional behaviour which distinguish a profession from a trade. . . . I confess myself to be a great admirer of tradition. The longer you can look back, the farther you can look forward. This is not a philosophical or political argument, any oculist will tell you this is true. The wider the span, the longer the continuity the greater is the sense of duty in individual men and women, each contributing their brief life's work to the preservation and progress of the land in which they live, of the society of which they are members, and the world of which they are servants."

With this in mind, we can only conclude thus: in medical ethics, to do one's work well; in medical economics (no matter how paradoxical this may sound here) do unto others as thou wouldst have done unto thee. Another proof, if necessary, that ethics are an integral part of the practice of medicine.

## MEDICAL SOCIETIES

### Ontario Association of Pathologists

The eleventh annual meeting of the Ontario Association of Pathologists was held at the Royal Connaught Hotel in Hamilton on October 29-30. A scientific session was held in the morning and afternoon of the 29th, a business meeting in the late afternoon and a banquet at night. Dr. W. J. Deadman of Hamilton entertained the members afterwards at his farm near Hamilton. On the 30th, problem slides were discussed with Dr. W. L. Robinson, Banting Institute, acting as referee. The guest speaker at the meeting was Dr. F. W. Hartman, Pathologist at the Henry Ford Hospital, Detroit. His subject was "Lesions of the Liver and Kidneys in Experimental Burns and Shock". Dr. J. H. Fisher of London was elected Chairman for the next meeting in London, Ont.

### Academy of Medicine, Toronto

The Annual Dinner and Stated Meeting of the Academy of Medicine, Toronto, was held in the Ballroom, Royal York Hotel on October 5. Dr. W. A. Burr, President for 1948-49 made his inaugural address. His subject was "Experiences in Medico-Legal Work". A certificate of Honorary Fellowship was presented to President Sidney Smith of the University of Toronto. Dr. T. C. Routley presented the replica of the Presidential Badge to the Past President, Dr. E. M. Henderson. Addresses were given by representatives from the Province of Ontario and the City of Toronto.

At a combined meeting of the Section of Industrial Medicine with the Section of Preventive Medicine and Hygiene, held at the Academy of Medicine on October 22, Mr. H. C. Rhodes of the Health League of Canada spoke on "Health Education in Industry", Mr. K. C. Charron of the Department of National Health and Welfare on "Industrial Health in Canada" and Dr. H. B. Speakman, Director, Ontario Research Foundation, on "Research in Industry".

NOBLE SHARPE

### The Calgary Medical Society

At the meeting of the Calgary and District Medical Society on October 12 Dr. J. W. Richardson spoke on Alberta Medical Services Incorporated and pointed out the stand which he took at the meeting of the Council on which he represented the Calgary and District Medical Society along with the representatives from six other districts. He stated that he opposed the implementing of the scheme until after the September meeting of the Alberta Division of the Canadian Medical Association and presented a letter confirming this. He strongly pointed out that he opposed it as a representative of the Calgary and District Medical Society thereby following their directions to him, and that he did not oppose it from choice. He then dealt with several questions such as the urgency of attempting the scheme, why the 75% basis for the payment of fees and the matter of non-differentiation between specialist and general practitioner fees.

Dr. Florendine outlined the x-ray treatment of haemangioma and vascular nevi. He also presented a short talk on the x-ray treatment of verruca. Dr. Cowell-Taylor spoke on head injuries. He outlined their mechanism of production, the type of injuries involved to the head, the diagnosis of closed injuries of the head, indications for surgical treatment for head injuries and the treatment of linear, indented and depressed fractures of the skull.

### Defence Medical Association, Western Quebec Branch

The annual meeting of the Defence Medical Association, Western Quebec Branch was held on October 14, 1948, at the new R.C.A.M.C. and R.C.D.C. Armouries, 3626 St. Urbain St., Montreal. Brigadier C. S. Thompson, O.B.E. was elected President for the coming year with S./Capt. D. R. Webster, O.B.E. as Vice-president, Colonel C. U. Letourneau, O.B.E. as Secretary-Treasurer and W./Cmdr. G. Turner, Lieut.-Col. P. Martin, Lieut.-Col. J. R. Lochead as members of the Executive.

The guest speaker was Major-General E. G. Weeks, C.B., C.B.E., M.C. & Bar, M.M. & Bar, who gave an interesting exposé of the present status of the Canadian Army and the military problems concerning Canada at present and in the probable future.

Several important resolutions were adopted whose main theme concerned medical preparations for defence and the conservation of medical manpower in the event of war.

The new armouries which contain the most modern facilities and amenities for all ranks are the culmination of the efforts of the Defence Medical Association to obtain better accommodation. The new quarters are a source of deep satisfaction to the Association, and to its members.

### Montreal Medico-Chirurgical Society

The 16th Annual Clinical convention of the Montreal Medico-Chirurgical Society was held in Montreal, October 18 to 23. The program included presentations in nine different hospitals, thus providing for even more than the usual variety of material.

The Convention Dinner was held on October 19, with Dr. G. E. Hodge as chairman. Dr. A. T. Bazin was toasted as the only member present who was an original charter member of the Montreal Medico-Chirurgical Society. Dr. Bazin received an ovation on rising to reply. He gave a brief and highly interesting account of his early experiences when in charge of the Civic Infectious Hospital in Montreal, at a time (1894) when diphtheria antitoxin had not been accepted in treatment, and the mortality was as high as 80%. In those days the regular routine was swabbing out the throat every two hours with hydrogen peroxide and perchloride of iron, the child being tightly bound to prevent its struggles.

The speaker of the evening was Dr. Melville C. Watson of Toronto, president of the Physician's Services Ltd., who in his characteristic manner described the development of this prepaid medical plan. It had the distinguishing feature of being organized and operated by physicians themselves, and this brought out certain latent weaknesses of the profession. Dr. Watson pointed out that in the war and in its professional work generally the credit of the profession stood very high, deservedly. But when it came to the administration by the doctors themselves of a plan for making medical services available in proportion to the capacity of the patient to pay, the weaknesses referred to became evident. There seemed to be an irreducible minimum of men who would not play the game or follow the rules. And there was also the difficulty of getting men to submit to the necessary amount of regulation. Another difficulty had been to find a fee schedule which was either complete or properly arranged.

If, however, the profession was unable to show that it could from within itself provide a workable plan for giving medical service to the people in a form which would lighten the economic burden and still be complete, then there was little question but that this provision would be taken over by governmental agencies, and the profession would find themselves forced into a scheme of things in the ordering of which they would have very little voice. Herein lay the challenge which brought about the formation of the Physician's Services Ltd.

In thanking Dr. Watson, Dr. D. S. Lewis spoke of the great interest with which organized medicine, in the shape of the C.M.A., was watching the progress of the Physician's Services Ltd., since its success would go far to demonstrate the capacity of the profession to administer as well as to carry on its professional work.

## NOTES ON GENERAL PRACTICE

[This column will be devoted to points concerned with general practice. Questions are welcomed. They will be answered by well qualified men. Other short contributions or notes on general practice will also be welcome. General practitioners are particularly invited to make use of the column. All communications should be signed, but the writer's name will be omitted on request.—EDITOR.]

### To the Editor:

**What Methods of Investigation Should be Followed In the Study of a Patient with Head Noises?**—H. Gibson Hall, Toronto.

The most frequent head noise that one encounters is the so-called tinnitus or ringing in the ears. This for the most part is constant and usually associated with attacks of vertigo and progressive deafness. The three together compose Ménière's syndrome. This is investigated by x-rays of the skull and mastoids, audiometric and vestibular function tests. Tinnitus may be an early sign of an acoustic neuroma and be associated with deafness. The internal auditory canal should be seen in the skull films. Tinnitus is also present in profound anaemias and blood studies should be done. Drugs as a possible cause should be excluded. A careful history and physical examination will frequently reveal the cause.

Another type of head noise that one encounters rarely is the auditory aura which may precede an epileptic attack, or may itself be the complete attack. This differs from the tinnitus in that it comes in definite attacks. It should be considered as a possible first symptom of a brain tumour and investigation should proceed along these lines. First, a history, physical and neurological examination with visual field examination and x-rays of the skull. If the skull films are normal and there is no papilloedema, then a lumbar puncture can be done. If possible an electroencephalogram should be done and one should consider doing a pneumoencephalogram.

Sometimes the patient complains of a loud noise synchronous with the pulse. This is found in arteriovenous aneurysms and the examiner himself can hear this by applying the stethoscope to the skull over the orbits, temples or great vessels of the neck. There is frequently a pulsating exophthalmos.

If the head noise is organized, such as voices, one should of course consider a psychiatric condition and investigation should be along psychiatric lines.

**What are the Indications for the Use of a Lactic Acid Formula in Infant Feeding? What is the Most Practical Way of Making up Such a Formula in the Home?**—H. Gibson Hall, Toronto.

Lactic acid milk (first introduced by Marriott of St. Louis) was and still is used to control "digestive disorders" of early infancy. The addition of lactic acid to cow's milk has the effect of producing smaller curds which are better handled by the infant's digestive mechanism. The high buffer of casein, calcium and phosphates in cow's milk neutralizes the HCl of the stomach and thus interferes with gastric digestion. The addition of lactic acid is said to mitigate this situation.

Marriott recommends the addition of lactic acid to cow's milk in the following amounts and in the following way.

Add 1½ oz. of the acid to 40 oz. of milk. This is equal to about 4 or 5 drops of lactic acid to the oz.

Use pasteurized or boiled milk.

Dilute the lactic acid with water 1 to 2 oz. and add slowly to the milk.

*Be sure to have the milk cold before adding the acid.*  
Add slowly and stir constantly while adding.

NOTE.—The usefulness of acidifying milk has been reduced to almost nil by the introduction of evaporated milk and the boiling of milk, as apparently the process in each instance gives the same result.

The following extracts from Dr. W. V. Johnston's paper on "General Practice in the Changing Order" (*This Journal*, 59: 167, 1948) are worthy of repetition:

(a) The survival of all of us from the cradle to the grave is becoming increasingly medicated.  
(b) A general practice is like a baby—the smaller it is the more it must be nursed. But it is often forgotten that as it grows it is still like a child in that if it gets too much attention it becomes too demanding.

(c) The thorough examination of apparently healthy people at public expense for the detection of one disease has elements of absurdity about it.

#### Those Bulgars!

The first Toronto resident to die this year of poliomyelitis, a five-year old boy died today of bulgar poliomyelitis, said to be the most deadly type.—(*Montreal Daily Star*, July 19, 1948.)

## MISCELLANY

### Prescribing Narcotics 70 Years Ago

[*The following letter\** shows that 70 years ago druggists were having much the same difficulty regarding repeat prescriptions for narcotics, as at present.—EDITOR.]

Montreal, Nov. 7, 1879

To the Editor,  
*Canada Medical and Surgical Journal*:

May I propose to the prescribing physicians of Montreal that some understanding be arrived at with pharmacists regulating the repetition of prescriptions containing Morphia, Chloral, etc.

I am sure my confrères would be willing to abide by a recommendation from the Medico-Chirurgical Society and the Société Médicale on the subject.

For instance, a circular from these bodies to the effect that pharmacists are politely requested not to repeat prescriptions containing certain drugs without an order from the prescriber would, I think, have the desired effect. It would extricate dispensers from a dilemma which frequently presents itself.

To-day a bottle was presented at my counter by a lady to be refilled. It was a mixture containing a large dose of Chloral Hydrate, and had been prescribed in January last. On my hesitating to fill it without a new order, she said it was for a gentleman who had been drinking a good deal of late, and he required it to make him sleep. The doctor had seen him this morning, and told him to get the bottle refilled. It is not a pleasant thing at any time to doubt a lady's word. I think she spoke the truth, and I obeyed her.

Undoubtedly a grave responsibility was taken by me, which might have been obviated if some well understood rule was in force.

With regard to ordinary prescriptions, I think it would be injudicious to interfere, as I am quite certain neither physician nor pharmacist can prevent the

public swallowing too much medicine. They will have it, either in the shape of a favorite prescription or a patent nostrum.

Yours truly,  
H. R. G.

[Dr. Malcolm Cameron of Toronto has kindly permitted us to publish the following extracts from a letter to him by Dr. Robert B. McClure, written from China in August, 1948. Dr. McClure's work in China is well known to his Canadian confrères.—EDITOR.]

Just the other day the second big shipment of *Ann. Surg.* and *Surg., Gyn. & Obst.* came in. It is most decent of you to send these to me and you have no idea what a lift it gives one. There is always so much of topical interest too in journals that cover such a wide range of the subject.

The transperitoneal approach to the intervertebral disc interested me particularly. We see frequent cases out here. In our surgical work we are a referred hospital. We get our cases sent to us from all over China. It is nice to feel that others have confidence in us but the truth is that one cannot do everything. I watched Dr. Cone of the Montreal Neurological do some of his but he has instruments and equipment such as we do not have and of course it is ridiculous to think that it is the tools that make all the difference—the truth is I just have not had the training or the experience to do these. I have done three of these since coming out here in March with an excellent result in one, fair in one and lousy in one. Any method that would allow us to make a better job through a more familiar approach is all to the good. I shall try the next one by this method.

Never in my life before have I had such good surgical work. Good for two or three reasons. First I've never had such good equipment to work with on the mission field thanks to U.N.R.R.A. stuff that was two years late in being delivered but that did eventually come through; it is still dribbling through from day to day yet and then we have stuff from Canadian Red Cross, Canadian Aid to China Fund and British Red Cross as well. Mission Hospitals on the whole have done pretty well by this and have a decent chance to start over new. The tragedy of course is that nearly half of the rehabilitated hospitals in North China including all the United Church Hospitals in North China have been utterly destroyed by communists since their post-war rehabilitation work was done. The second nice thing is that one has a fine staff to work with. Consultants in medicine and other lines of surgery such as one has never had before. This is getting better every day. Right now we have a fine orthopaedic man from Edinburgh, an excellent internist from Norway, a good Chinese tropical medicine man from Liverpool and now a radiologist coming from Manchester. What more could one ask for? Lastly we have a wealth of clinical material that has much of it been filtered before it comes to us. The man who comes 300 miles overland for surgical attention has made up his mind to get something done.

In surgery there is not as much abdominal as one might think. That is perhaps due unconsciously to one's individual preference. I do most of the tumour work. Result we get some marvellous tumour cases of the head and neck, lots of block dissections. Lots of carcinoma of the penis, lots of tumours of the maxilla and mandible that nobody else in China seems inclined to touch. We have not the anaesthetic support we should like but with rectal ether, preliminary ligation of the external carotid artery, diathermy and radium with deep therapy x-ray due to start in October we can do something for them. There are lots of block dissections of the neck. I shall never be a Wookey but after one has done his first hundred and fifty one does face them with less fear though as much respect as one did at first.

\* *Canada Medical and Surgical Journal*, 8: 211, 1879.

There are lots of T.B. joints with excisions of the knees and elbows playing a big part and we are doing a series of arthrodesis of the hips. A few Hibbs arthrodesis of the spines too. The first two months here we did not have a single carcinoma of the breast but now we do two a week.

Since coming out here I have been able, thanks to the brush-up that Dr. Bill Robinson and Prof. Wm. Boyd gave me in Pathology, to establish a pathological section service for central China. We only do some 30 sections per week but we are getting people out of the habit of throwing all lumps into the slop pail or burying them in the backyard. We have trained two technicians in cutting sections and hope sometime when friends rally round to put in an autotechnicon. At the moment I do the reading myself but we have a lady in the community here married to a business man and this lady was up to a year ago assistant professor of pathology at Stamford University. She was hankering to keep her hand in so we have been able to put her on to this work. She is away in Shanghai having her baby just now but will be back shortly. In raising the standard of surgical work done throughout a district few things do as much as this type of service.

The other gratifying thing done out here is in training personnel. We have a large intern and resident staff trying to give them a systematic training up to the limits of their capacity and some of them have a high capacity indeed. Most of these young people went through meds when they were cut off from the outside world of their profession. To bring them up to date now is quite a task. To teach them what we have learned in supportive treatment, plasma, transfusions, salines even more routinely used, intestinal decompressions, x-rays in moderation for films are still very expensive, to use ophthalmoscopes, sigmoidoscopes and laboratory routines, many of them went through schools when microscopes were precious things that only were allowed to use. Such is medical rehabilitation in a new land.

## CANADIAN ARMED FORCES

### News of the Medical Services

Surgeon Captain A. McCallum, Medical Director General, Royal Canadian Navy, having recently returned from a series of medical conferences in the United Kingdom and Europe, reports that his most unique experience during the tour was his penetration of the "Iron Curtain". This, he states, is not difficult in Central European or satellite countries if one has a legitimate errand such as a convention or congress to attend or a business deal to implement. On the other hand, tourist traffic is not an "industry" as practised in the democratic countries; and casual visitors are not encouraged.

Surgeon Captain McCallum's mission was to represent the medical branches of the three Armed Forces of Canada at a medical congress held in Budapest, Hungary, September 4 to 12, 1948. There was a total attendance of about 2,500 doctors representing all components of the medical profession; but, with the exception of about 300 delegates from foreign countries, the remainder were Hungarian. There were no representatives from the United States or Russia. Approximately 80 delegates from 15 countries attended the Services Section, the only Anglo-Saxons present being the Canadian delegate and Brigadier D. Fettes, Consultant Surgeon to the British Army.

The Hungarian language was used extensively, making it difficult to follow many of the scientific papers; but for general purposes it was amazing how many foreigners had a working knowledge of English, which

at least made conversation and social events quite interesting. The Anglo-Saxon delegates were cordially received and made to feel very welcome.

Budapest, once one of Europe's most beautiful cities, was rather badly scarred by warfare; but repairs are going on with great intensity and within a year or two the city should show little evidence of her wounds.

Russian troops have been practically all withdrawn from Hungary and seldom does one see a Russian uniform; but Russia's influence is exhibited in the lavish display of Russian flags and monuments, and the Communist form of government.

Colonel Sewell Munson Corbett, Medical Corps, U.S. Army, has arrived at Army Headquarters, Ottawa, to take up the appointment of U.S. Medical Liaison Officer in the office of the Director General of Medical Services (Army). He replaced Major M. E. Brackett, who has returned to duty in the U.S.A. The post was created in February, 1947, to facilitate co-operation and exchange of information between the Army Medical Corps of the two countries. The R.C.A.M.C. has been represented in the U.S. Army Surgeon General's Office in Washington since June, 1943, the appointment being held at present by Major J. L. Kinsman.

Colonel Corbett is a graduate of George Washington University Medical School and has been in the U.S. Regular Army since 1917. He served in the Mexican Border Campaign and both World Wars, and has held posts in Hawaii and the Panama Canal Zone. He brings to his new appointment exceptionally wide experience in medical command and administration.

Official approval has been given for the appointment of a Medical Research Liaison Officer in Washington to represent the Medical Services of the Armed Forces. Lieut.-Col. A. A. James, R.C.A.M.C., Command Medical Officer, Eastern Command, has been seconded to the Defence Research Board for duty as the Medical Research Liaison Officer in Washington. In this capacity he will be concerned with all research of medical and biological interest to the Navy, Army and Air Force. The appointment is a new departure in peacetime, and in view of the large amount of medical investigation being performed in the United States Armed Forces, should be of much value to the Canadian Medical Services. A graduate of the University of Western Ontario, Lieut.-Col. James was engaged in teaching and research in the physiology department of that University before joining the R.C.A.M.C. In addition to his Army duties, he has had experience with the R.C.N. and R.C.A.F. which will prove useful in his new post.

This appointment is on a rotational basis between the three Medical Services, the present arrangement being that the Army representative will be relieved by either the R.C.N. or R.C.A.F. at the expiration of two year's tour of duty.

Since publication, the apparently generous stocks of the Medical Directorate's publication "Medical Aspects of Atomic Warfare" have been exhausted due to an unforeseen demand from sources outside the R.C.A.M.C. Originally intended as a primer in nuclear physics for Medical Officers and consisting of a series of edited lectures given at the United States Army Medical Department and Graduate School, it is being adopted by other Corps and Services who have a requirement for similar knowledge. The booklet is unencumbered by great medical detail, mainly due to the lack of any considerable volume of precise knowledge as to the prevention and treatment of the effects of atomic explosion.

The Annual Meeting of the Defence Medical Associations of Canada was held in Ottawa on Friday and Saturday, November 5 and 6, 1948, under the Chairmanship of the President, Colonel Lavell H. Leeson of Vancouver. The attendance at all sessions was very good as well as representative of ex-service and presently serving medical officers of the active and reserve forces of the three medical services.

Lieut.-Gen. C. Foulkes, C.B., C.B.E., D.S.O., Chief of the General Staff (Army), in his capacity of Chairman of the Chiefs of Staff Committee, addressed the meeting at the Friday afternoon session giving a general picture of the present state of organization of Canada's defence and the planning for the future. These are under constant review in the light of international developments and envisage the possibility of an accidental war. Civil defence in the event of attack by presently considered feasible weapons is presently being planned on a nation-wide basis.

At the Annual Dinner, Friday evening, Dr. O. M. Solandt, O.B.E., Chairman of the Defence Research Board, in an excellent address as guest speaker, gave a very comprehensive exposé of the important rôle played by medical research in the complex organization of the defence against modern warfare. These researches are very widespread and cover the field of psychology and public health as well as that of diagnosis and treatment of diseases and injury.

The recruit must be properly assessed as to his physical and mental capabilities and possibilities to avoid training wastage and to ensure efficiency when trained. Throughout his service he should be considered as a human being and research should be directed towards his welfare. The weapons and machines he uses should fit him, his clothing whether in the tropics or in the Arctic, on the ground, under water or at high altitude, should be comfortable, his nutrition must be adequate, his defensive equipment must not hamper the execution of his task.

Medical research for defence also includes the study of training methods, accommodation problems, adaption to strange climate and environments. The field is very wide indeed.

Much has been done already and more is being done in this country and there is constant interchange of pertinent information with the British and American scientists.

There were 26 resolutions submitted and discussed. It was resolved to recommend to the Government that a nationally representative medical body be formed immediately to compile the present medical manpower resources and plan their assignment to the civilian population and industry as well as to the armed forces in the event of a national emergency to ensure proportionate distribution and prevent any wastage.

The following officers were elected for 1949: *Honorary President*—Brig. A. E. McCusker, C.B.E., M.C., E.D., Regina; *Honorary First Vice-President*—Colonel P. J. Goldsmith, C.B.E., Toronto; *Honorary Second Vice-President*—Colonel F. S. Patch, D.S.O., Montreal; *President*—Brig. H. M. Elder, C.B.E., Montreal; *First Vice-President*—Surg. Capt. D. R. Webster, O.B.E., Montreal; *Second Vice-President*—Group Captain A. D. Kelly, Toronto; *Third Vice-President*—Lieut.-Col. E. F. Ross, Halifax; *Honorary Secretary-Treasurer*—Colonel J. Paul Laplante, O.B.E., Ste. Anne de Bellevue, Que.

*Executive:* *Chairman*—Colonel H. G. Young, D.S.O., M.C., Moose Jaw, Sask.; *Members*—Wing Comdr. D. R. Easton, Edmonton, Colonel C. Gossage, O.B.E., Toronto, Surg. Cmdr. W. MacKenzie, Edmonton, Lieut.-Col. J. A. Melanson, Fredericton, Brig. G. A. Sinclair, C.B.E., Toronto.

It was brought out that defence forces, nuclear in peacetime, would require rapid expansion. The reserve forces aim at preparing material for such expansion. All ex-service medical officers should contribute their experience and support to the reserve force in some capacity. The D.M.A. lends support to the reserve force and contributes towards efficient medical services by bringing the proper authorities constructive ideas from the members. Membership in the Defence Medical Association is an important avenue towards good medical services. All ex-service and presently serving medical officers are earnestly urged to become members of their respective Provincial branch.

## CORRESPONDENCE

### Vitamin E

#### To the Editor:

We were pleased to notice in the September issue of the *Journal*, the paper by Burgess and Pritchard describing the successful treatment of ulcers of the leg with Vitamin E.

The authors use in their article the terms "vitamin E complex" and "mixed tocopherols", both of which we would like to see deleted, at least from clinical literature. Indeed we have called the attention of the Federal Ministry of Health to the confusion that is widespread in the profession caused by such labels as "mixed tocopherols" on commercial Vitamin E preparations. We have contended from the first that such labels should speak *only in terms of alpha tocopherol values as determined by rat bio-assay*. Until some such standard is accepted generally physicians everywhere will remain dismayed by an unfortunate nomenclature.

There are two further points of importance we could mention. Quicker and better results in the management of leg ulcers are achieved with doses of 200 to 400 mgm. of alpha tocopherol per day taken orally. Even such results may be improved in many instances by the concomitant use of the same substance in ointment form. In this latter case there are, occasionally, unpleasant but mild local erythematous skin reactions which disappear quickly when the ointment is discontinued.

This paper is, of course, just one more in the series<sup>1 to 10</sup> that has appeared to confirm our extensive and much earlier work upon the value of alpha tocopherol in cardiac and vascular conditions since our original announcement before the St. Thomas and East Elgin Medical Society in May, 1945. Indeed, in our paper read at Kansas City in April, 1947 we mentioned eight such cases as those described by Drs. Burgess and Pritchard in the paper published by you. We note with interest that the first case in their series began treatment in June, 1947 — some two months after that announcement. The first actual reference to the influence of E on the vascular system, of course, is ours of 1942.

We were amazed, therefore, to notice no reference in the Burgess-Pritchard article to our pioneer work in the field, particularly since we know that Dr. Burgess has been aware of it through our mutual contacts with Hickman, Harris and Mason, to whose writings he made reference, had seen the article in *Surgery, Gynaecology and Obstetrics* that appeared 8 months ago, long before he corrected proof on your article, an article which showed coloured photographs of our results in leg ulcers. He was, indeed, Chairman of the meeting in Montreal on May 15, last, at which we showed numerous colour slides illustrating what we had achieved in this field. This looks like another area of the net of silence that has been cast over us.

We must protest, therefore, against the omission in this paper of courteous reference to our work. In honesty your *Journal* should make acknowledgment of our priority. And we protest the more vigorously since your *Journal* had previously refused to publish reports either on our studies on Heart Disease or Diabetes, the first within six hours after you first saw it! Surely it is futile for anyone to attempt any longer to ignore or suppress discoveries of this magnitude, and it is stating the obvious to say that no one today can write on the clinical use of Vitamin E without mentioning our work which dates back to 1933.

Official Canadian medicine is making itself ridiculous in the eyes of the world by its ostrich reaction to our discoveries. Already the public is beginning to feel a lively distrust of the reaction of medical men to them. This must rapidly increase as things now stand, for the use of Vitamin E is snowballing. Could there be any more potent factor in upsetting the whole

structure of medical practice in this country, which is based on public confidence, than to have the appalling record of the effort to suppress all mention of our work and to blackball us become generally known? For example why should the public not hear that discoveries incomparably more significant to the general weal than Banting's, have been unable to get a hearing before any medical group or society in Canada at any time in the last 2 years, and still cannot? Or that a reputable pharmaceutical house selling vitamin E is unable to buy advertising space in your *Journal*—although some curious products are described there? And so on *ad nauseam*. How long, in the effort to maintain the dignity and honourable reputation of the Profession, are we to submit to such treatment? If we were mistaken would it not be the easiest thing in the world to put us up before a medical audience, listen to our feeble efforts, then tear us to pieces? But surely it is obvious that we are not wrong and that no one can now take our work apart.

After all, the senior member of this group served an internship 20 years ago in the Montreal General Hospital at the same time as your brother, and married a Montreal General nurse well known to you. How dare any of you there lend support to any intrigue against us? How can our personal or professional integrity be challenged?

And we are not paranoids. What has happened to us is not coincidence, for coincidence applies to the rarity, not the rule. We have not forgotten that previous to our work on Heart Disease the senior of us had twice been asked to address the Canadian Medical Association, twice the Ontario Medical Association, and very many county societies. He was one of the few Canadian practitioners ever asked to present his work to an English Medical Meeting.

So much has been done by our critics on the assumptions that we were totally wrong and that we would run. We were not wrong and we will not run. These same critics would have been a great deal wiser and more discreet to have left themselves some way out. Now it is almost too late for them to recant, unfortunately for the reputation of many cardiologists and the Profession as a whole.

We have become a sort of test case of the rights of the "little man" in medicine even when such men have at least as stout equipment as the "giants" and are as unimpressed by the latter as were Caleb and Joshua. Can only the "right people" or university group make major discoveries and publish them? What scientific rights have private practitioners in Canada? What are the rights of the Canadian people?

The crux of all this is that the conscience of our Nation's medicine is at issue here. This is not condemnation without trial, but something much less defensible, what seems like boycott after acquittal by the governing body of medicine in Ontario. You will remember that it called us before Council on the most absurd series of charges as long ago as November, 1946, and had *not a word* to say to us after we had finished presenting the story of our discovery and how we had handled it. Unhappily, the representative of the College was a good deal less reticent with the Press and Radio and in the columns of the Annual Bulletin.

Another comment that comes to mind, of course, is that you objected to our Heart paper as being "not sufficiently authenticated", at least when speaking to the Press. What other adjectives would you apply to the paper by Burgess and Pritchard — or to 90 per cent or more of those you publish? Please bear in mind, sir, that you are responsible not only to contemporary Canadian Medicine, but that you stand at the bar of medical history. Would it not be unpleasant to find your company there was that Wakley, the younger, of *The Lancet* who opposed Lister so long?

As this letter has probably made clear, we are completely aware of the tightly woven blanket of silence thrown over our studies. But please believe that not all the cardiologists or medical editors in Christendom can suppress them. We would be recreant in our duty to Canada and to mankind if we permitted such injustice to triumph. Our penicillin will not wait 14 years for medical acceptance while thousands die, nor our B.C.G. wait over 40 years for its trial on over 7,000,000 persons! You will pardon us, therefore, if we pursue the only course left open to us by the Canadian profession, bearing in mind that its ethical standard is understood to be based on the Golden Rule and the wish to withhold neither help nor healing from patients.

This is the atom bomb of modern medicine. If it is difficult to handle it is still more difficult to stand in its way. We wonder this has not already become apparent.

You may recall an old bit of Aristophanes: "Let not a lion enter the city, but if he enter, see thou bend thee to his ways".

Yours Indignantly,

A. VOGELSANG  
W. E. SHUTE  
E. V. SHUTE

#### REFERENCES

1. PIN, L.: Contribution à l'Etude des Propriétés Physiologiques et thérapeutiques de la Vitamine E. M. Lavergne, Paris, France, 1947.
2. AGADJANIAN, N.: *J. de Med. de Paris*, 68: 29, 1948.
3. GATZ, A. J. AND HOUCHEIN, O. B.: *Anat. Rec.*, 97: 337, 1947.
4. BUTTURINI, U.: *Gio. di Clin. Med.*, 27: 400, 1946.
5. MARTIN, G. V. AND FAUST, F. B.: *J. Exp. Med. Surg.*, 5: 505, 1947.
6. GULLICKSON, T. W. AND CALVERLEY, C. E.: *Science*, June 28, 1946.
7. LAMBERT, S. H.: *Veterinary Record*, July 19, 1947.
8. MOLOTHICK, M. B.: *Med. Rec.*, 106: 667, 1947.
9. GOVIER, W. M., GANZ, N. AND GRELLIA, M. E.: *J. Pharmacol. & Exp. Therap.*, 88: 373, 1946.
10. SPAULDING, M. E. AND GRAHAM, W. O.: *J. Biol. Chem.*, 170: 711, 1947.

[We have not published Dr. Shute's work because it was felt that his conclusions were not supported by the evidence adduced. Nothing has happened to change this point of view, unless it be to confirm it: witness the statement at a recent section meeting of the American Medical Association<sup>1</sup> that vitamin E had been found to be valueless in the treatment of cardiac disease and that the original claim that it is of benefit can be attributed to ceremonial therapy. Reports are also available<sup>2</sup> to 5 which reach the conclusion that vitamin E has no effective place in the treatment of cardiac disease.

So far as the use of vitamin E in the treatment of diabetes is concerned, it is tragic that the boon of insulin should be interfered with by the attempted introduction of a method for which there exists little clinical justification or experimental support. Insulin beautifully and convincingly demonstrates the value that lies in the co-ordination of sound experimental research and thorough clinical trial. No such conviction attends these particular claims for vitamin E. Our great concern is lest patients may abandon the established treatment—diet and insulin—and embrace the unknown. Serious difficulties of this kind have already arisen.—EDITOR.]

#### REFERENCES

1. Discussion, *J. Am. M. Ass.*, 136: 1031, 1948.
2. MAKINSON, D. H., OLESKY, S. AND STONE, R. V.: *The Lancet*, 1: 89, 1948.
3. GRAM, N. J. AND SCHMIDT, V.: *Nordisk Medicin, Göteborg*, 37: 51, 1948.
4. BAER, S., HEINE, W. I. AND GELFORD, D. B.: *Am. J. Med. Sc.*, 215: 542, 1948.
5. LEVY, H. AND BOAS, E. P.: *Ann. Int. Med.*, 28: 1117, 1948.

## Mikulicz's Disease and Sjogren's Syndrome

To the Editor:

In the April, 1948, number of this *Journal* I published with Dr. E. H. Shannon a report on a case of Mikulicz's disease, together with a partial review of the literature and a differential diagnosis of parotid swellings. In this differential diagnosis I omitted, through ignorance, the condition known to oculists as Sjogren's syndrome.

Latman and Favata say that Sjogren in 1933 described a chronic disorder characterized by reduction in the secretions of the lachrymal and salivary glands with accompanying keratoconjunctivitis sicca together with dryness of the mucous membranes of the mouth and the upper respiratory system. A persistent enlargement of the parotid glands sometimes occurs and lachrymal glands may be affected. The authors quoted illustrate and describe the pathological picture of the parotid in such a case as a mass of lymphoid cells in a fine stroma of connective tissue.

It seems to me that there is no way of distinguishing this condition from Mikulicz's disease, and that the keratoconjunctivitis sicca is simply a complication, and that the term Sjogren's syndrome should be dropped.

T. G. HEATON, M.B.  
Toronto, Ont.

### REFERENCE

1. LATMAN, F. C. AND FAVATA, B. V.: *Arch. Ophthal.*, N.S.35: 227, 1946.

## The Irradiation of Benign Lesions

To the Editor:

Dr. D. E. H. Cleveland's excellent article, "The Removal of Superfluous Hair by X-rays," appearing on page 374 of your October issue, merits commendation. It is gratifying that so eminent a dermatologist deals with this vexing phase of irradiation misuse. Could he not be persuaded to go further and deal with the whole problem of radiodermatitis which stems from our professional overindulgence in the use of irradiation therapy for benign lesions?

Most alert and commendable was Dr. Cleveland's stand on the x-ray charlatanism that came into vogue in the late twenties and early thirties. The problems and vicissitudes he encountered in the removal of this obvious blight from the Vancouver area, in a province that stands as a bulwark of advanced medical legislation, makes one wonder what the status of such quackery might be in some of our less enlightened provinces! If, as Dr. Cleveland writes, "Removal of superfluous hair by roentgen therapy is still being widely practised by commercial concerns and constitutes a menace to which public health authorities are not giving adequate attention," one must immediately share his concern. I had hoped it was otherwise.

The Montreal area too suffered from the ravages of the "Tricho System". But the "Tricho System" was not all. We have been too ready, as a profession, to prescribe "a few x-ray treatments," thus passing the buck along to the roentgenologist on some patient's bothersome complaint. Within the writer's immediate purview are some ten cases bearing mute evidence of an overindulgence in x-ray therapy for benign lesions. These unfortunate have filtered through the hands of dermatologists who have been harassed over the years by their intractable disease and its attendant complaints and have finally turned them over for plastic surgery because of actual or pending malignancy. One patient is dead of such so-caused malignancy and the others are undergoing extensive plastic manoeuvres to try and better their unhappy lot. I have no corner on this dismal market and my Canadian plastic colleagues must be able to match my experiences case for case. For every patient coming to plastic hands, there must be

eight or ten seeking solace in dermatologic or other medical offices.

Nor is this problem limited to our own Canadian bailiwick. British concern led the *British Journal of Radiology*, 20: 235, p. 269, 1947, to report a symposium in which McIndoe considered the plastic aspect, Forbes (Secretary of the Medical Defence Union) dealt with the legal aspects of radiodermatitis and Windeyer considered it from the radiologist's viewpoint. McIndoe was most vehement in condemning irradiation on the palms, soles of the feet or perineum in benign conditions where other less dangerous methods are available. He has the particulars of 220 benign lesions treated by x-rays or radium in which subsequent extensive surgical procedures have been necessary for the relief of the resulting radiodermatitis. He refers especially to the treatment of plantar and palmar warts, pruritus ani and vulvæ.

Members of the American Society of Plastic Surgeons are fuming inwardly and threatening to gather together a photographic exhibit to illustrate the ravages of irradiation therapy used in the treatment of benign lesions.

What can we do but echo these British and American sentiments? We might at least try to point out to our professional confrères some of the dangers attendant upon irradiation, that irradiation is a double-edged knife, a blunt one, and that we are not sure in which direction it cuts.

JOHN GERRE

## Replacement Transfusion

To the Editor:

Our interest has been aroused by the recent article by Drs. Frazer and Mustard detailing their experiences with exchange transfusion for erythroblastosis fetalis. Their mortality statistics, namely, three fatalities in twenty-four cases are really excellent. However, they do mention that five of the infants exhibited cardiac embarrassment as a result of the procedure and required supportive treatment. One of the deaths was attributed to this mechanism.

Although it is not difficult to imagine how the fairly rapid injection of 20 c.c. of blood into the ductus venosus repeated twenty or more times could cause auricular dilatation this is only one of the faults of the umbilical catheter method, which carries with it the dangers of thrombosis, air-embolism, and haemorrhage, and violates the general principle that a blind procedure should be avoided whenever an open one will do as well. In the radial artery-saphenous vein technique in which the blood is introduced by gravity and withdrawn by permitting it to drip freely from a nicked radial artery these dangers are avoided. In over 50 exchange transfusions carried out by us using this method there has been no mortality or morbidity due to the procedure itself. Even the theoretical objection that has been raised by some that the small amount of heparin used in this method exposes the infant to the dangers of hidden haemorrhage can be overcome by performing the exchange transfusion without heparin, and simply wiping away any clot that forms to cover the arterial opening.

The main purpose of this communication is to point out an ever-present danger in any procedure in which large quantities of citrated blood are administered by any method. The citrate in the transfused blood forms an un-ionized complex with calcium which effectively removes calcium ion from the recipient's serum and produces symptoms of tetany as well as changes in cardiac rate and rhythm. It is this effect that is mainly responsible for the circulatory embarrassment encountered in these infants and must be guarded against. Fortunately, these occurrences can be prevented by the fractional administration of calcium gluconate intravenously, using one c.c. of a 10% solution for every 100 c.c. of blood injected. The injection

is given slowly and deliberately directly into the cannula and then flushed through promptly with a few c.c. of blood to prevent local clot formation. With this precaution exchange transfusion has proved as safe in our hands as simple transfusion.

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## SPECIAL CORRESPONDENCE

### The London Letter

(From our own correspondent)

#### A NEW BEVERIDGE REPORT

In "Voluntary Action: A Report of Methods of Social Advance", which has just been published, Lord Beveridge has completed a triumvirate of reports which future historians will undoubtedly classify as worthy and logical successors to the great work of the Webbs. Lord Beveridge's thesis is that, no matter how comprehensive a social security scheme may be, "the State cannot see to the rendering of all services that are needed to make a good society". Only voluntary effort can accomplish this, and his Report consists of a review of the voluntary organizations already in existence, how they can develop in the future, and the assistance which will be required from the State in facilitating their efforts. Thus legislation is recommended to allow Friendly Societies to extend their activities into the spheres of aiding the elderly and organizing holiday camps and guest houses on a non-profit making basis.

A strong plea is also made for the setting up of a Royal Commission to survey the existing charitable trusts, to make recommendations for their more efficient working and to review the whole question of present methods of taxation of such trusts. As an antidote to the present tendency for the subjugation of the individual in the interests of the State, this report has been warmly welcomed by all impartial social workers.

#### MEDICAL AND UNIVERSITY SALARIES

Ever since the publication of the Spens Report on the remuneration of consultants and specialists it has been obvious that the glaring discrepancies between the salaries of consultants in the National Health Service and those of university professors would inevitably lead to complications. The Vice-Chancellor of Cambridge University has now drawn attention to this in his address to the Senate at the opening of the academic year: "An immediate problem has been raised by the findings of the Spens Report on the remuneration of consultants and specialists. It is, on the face of it, absurd that, whereas the stipends of the majority of Cambridge professors do not rise above £1,550, a specialist appointed to the staff of a hospital is to be guaranteed a salary rising to £2,500 at the 1939 value of money". As £1,450 is the maximal professorial salary which the Treasury will recognize, it is clear that there is going to be increasing difficulty in attracting men of ability into the academic world. A subsidiary complication will arise when the Spens scale of salaries is accepted by the Treasury, as presumably the salaries of professors of clinical subjects, such as medicine and surgery, will need to be adjusted to the level of their consultant colleagues. This will mean that in medical schools professors in the clinical departments will be receiving salaries of £2,500 or more per annum, while their colleagues in the preclinical departments will not be able to rise above a maximum of £1,450. This is a state of affairs which the Vice-Chancellor, not unjustifiably, has described as being "not only absurd but intolerable".

#### CARE OF PARAPLEGICS

Some details have recently been released of the new hostel for paraplegics which is now being completed in Middlesex. The site has been chosen because it is in an area containing many light industries in which the inmates will be able to find employment. This is one of the distinguishing features of the principles underlying the treatment of paraplegics in this country—that they should be as self-reliant as possible. The hostel itself is all on one floor and is entirely constructed for the benefit of paraplegics. For instance, all doors move sideways on ball-bearings, and can be opened and shut by the touch of a finger. All the furniture is designed to be the right height for men in wheeled chairs, and cords and pulleys are provided for the inmates to lift themselves in and out of chairs, beds and baths. A special garage has been provided as every paraplegic has been provided with a motor-propelled chair, and within the next two years he will have the option of exchanging this for a small motor-car.

#### CLIPPINGS

These are strange times in which we live, and unfortunately we have no G. K. Chesterton to help us to maintain a sense of proportion with his paradoxical pen. If it is admitted that the press is a fair mirror of the age, then the following two excerpts require no comment. The first is from *The Times* of October 18, the second from the advertising columns of *The Lancet* of October 30.

#### TAXIS FOR TRAMPS

"The Essex County Council welfare committee has instructed its officers that tramps stranded late at night are to be given taxis to convey them to the nearest county council hostel or institution."

"Streptomycin.—Available London immediately, 100 grammes U.S. manufacture (Merck). Expiration date, March, 1949.—Offers to . . ."

WILLIAM A. R. THOMSON  
London, November, 1948.

## The Holland Letter

#### INFORMATION FOR PATIENTS WITH DIABETES MELLITUS

The information office of the Board of Nutrition has planned a campaign for official information for all the patients with diabetes mellitus in the Netherlands. There are about 50,000 people in Holland suffering from diabetes mellitus. They have founded a society, with a medical advisory council. The society has offered a yearly prize for the best research on diabetes in Holland. In 53 towns patients with diabetes mellitus are regularly controlled by state-sponsored dispensaries and polyclinics. In the bigger towns the regular control is exercised by the hospitals. In 15 towns nurses are regularly visiting patients with diabetes at their homes and in 13 small towns a weekly consulting hour is held for the patients with a diet.

All the hospitals and polyclinics have the assistance of a special trained dietist. In the bigger towns special lessons are given for the patients. Great interest is paid to the way of preparing the diet by means of variety of several foodstuffs.

#### GOVERNMENT'S PLANS FOR 1949

The state budget of the Dutch government for 1949, published in September, is revealing some facts showing the interest of the government for a better equipment of the services for public health. In several provinces of Holland and in Rotterdam some new polyclinics and consultation offices for rheumatism will be opened. A new laboratory for inorganic chemistry will be built for the University of Utrecht, a zoological laboratory will be opened for the University of Groningen, together with a new bacteriological laboratory for the same uni-

versity. The oldest university of the Netherlands, in Leyden, will be equipped with a new institute for infectious diseases.

In 1948 there were 6,774 students of medicine in the Dutch universities. Amongst them were 1,167 students, who were beginning their medical studies. The medical students formed 27% of the total number of students in the Dutch universities. Before the war there were fewer students of medicine, e.g., in 1938 there were only 3,715 against 6,774 in 1948. The interruption caused by the war of the work of pupils of high schools and universities has led to overcrowding of the universities nowadays with students.

#### TREATMENT OF ULCUS VENTRICULI WITH SUCCUS LIQUIRITIE

A very old and almost forgotten treatment of ulcerus ventriculi and duodeni was again tried by Dr. Verheyen in the university clinics of Prof. C. D. de Langen in Utrecht and by Dr. F. E. Revers in Utrecht. They made an ointment of succus liquiritiae by mixing two parts of succus liquiritiae with 1 part of water.

Before the meals a teaspoonful of the mixture was given to the patient. No dietary rules were given. The control with x-rays showed an improvement of most patients, in a great number of cases the ulcer totally disappeared. Some patients complained of severe headaches and slight oedema of hands, legs, and face. Those patients also had a feeling of oppression in the chest and abdominal aches.

Succus liquiritiae plainly increases gastric acid secretion. This is an argument for the spasmolytic action of succus in the treatment of ulcers.

#### A BENIGN ENCEPHALITIS EPIDEMIC

During the winter of 1946-47 an epidemic of subacute benign non-residual encephalitis occurred in women in a convalescent home somewhere in Holland. Prof. J. D. Verlinde, Dr. J. van der Werff and Dr. W. Briet of the department for bacteriology and experimental pathology of the Leyden university made a study of the virus of this epidemic.

From the liquor, the blood and the throat of some patients, a virus was isolated, which at first caused choriomeningitis in guinea-pigs only, but after passage could be adapted to mice. The virus as well as two choriomeningitis virus strains were hardly or not at all neutralized by the acute phase serum of the affected patients, whilst the convalescents' serum showed strongly neutralizing properties towards these strains. St. Louis and equine encephalomyelitis viruses (Eastern and Western type) were not neutralized by these sera. The isolated virus was strongly related to choriomeningitis virus of Armstrong. An epidemic caused by this virus has not been described before. There existed cross-immunity between the choriomeningitis virus and the causal agent of this epidemic. The disease occurred only in women patients, nurses and servant girls, and not in the male inhabitants of the home. The contacts between the male and female inhabitants only took place in the well-ventilated corridors where the concentration of the virus was very small.

It is known that choriomeningitis virus appears spontaneously in mice, but there was no indication that mice might have been the source of the infection. A real source of the infection has not been found. All patients recovered, so the epidemic bore a benign character.

J. Z. BARUCH

#### The Australian Letter

##### FREE MEDICINE

The matter of free drugs for all Australians is still in the forefront in medical circles. The British Medical Association has made certain counter-proposals to the Federal Minister for Health, and these are still under consideration. It is reported that about ten doctors

in the State of New South Wales are using the government formulary, government prescription form, etc. The matter may soon be overshadowed by the proposed introduction of the National Health Act by the Federal Government.

##### PAY FOR INTERNS

In the State of New South Wales, Resident Medical Officers (interns) in the teaching hospitals are paid the following amounts, determined in 1945 and brought up to date as to cost of living index, etc. First year of internship £342 plus room and board. For second and succeeding years, £482 plus room and board. This schedule applies to the five large teaching hospitals associated with the University of Sydney, and forms an "agreement" under the Industrial Court.

##### PAY FOR NURSES

Such pay is under an "award" by an industrial court order in November, 1947. The order is very comprehensive and may be of interest to Canadian readers. The award covers "Ward Cadets", nursing students, graduate nurses, special nurses, matrons, etc. Cadets are girls under 18 years of age who have applied to enter a school of nursing on attaining 18 years of age. Their work as Cadets is to carry out "elementary nursing duties", such as cleaning instruments, clothing, washing and serving the patients, making beds and running errands. They are paid the same wage as are the first year student nurses, i.e., £3-4-6 per week.

Hours of work are based on the nation-wide forty-hour week, or a maximum of 160 hours in 28 days. It is laid down that not more than 13 hours shall elapse between the beginning and the end of a day's duty. Overtime is paid for at the rate of 1½ times normal in excess of 10 hours on day work or 11 hours on night. Double pay is allowed for anything over a 12 hour shift. Meal times, 45 minutes for each meal while on duty, and 10 minutes per shift for light refreshments are fully paid. All nurses are entitled to 1½ days off per week, or 6 in 28 days. Night duty is limited to 8 consecutive weeks, and must be followed by an equal period on day duty. This does not apply to staff engaged specifically for night work.

Student nurses must be allowed to attend at least two-thirds of the lectures in their course, and cannot be compelled to give up their leave to go to lectures. Lecture time for students is considered as time worked, and is therefore paid for.

Graduate nurses' pay ranges from £6-3-6 for Junior Sisters to £9-11-0 for Supervisors. Deputy Matrons are paid up to £11-6-0, and Matrons up to £12-16-0 for 250 bed hospitals. All these are weekly rates of pay. For those retained on "close call", i.e., within the precincts of the hospital an extra two shillings daily is paid. On "remote call" it is one shilling.

Special nurses cannot be engaged for less than 4 hours daily, and are paid the standard rates for their rank plus 25%, and fares.

All nurses must be given free medical examination and free hospital care. Negative reactors to the Mantoux test can not be sent to nurse open tuberculosis cases. They are re-tested each 6 months. Annual leave is 28 days on full pay. Sick leave, which must be certified by a licensed physician is 14 days in the first year of duty, and 21 days each year thereafter. The maximum which may be accumulated is 42 days. After 15 years of service a nurse is entitled to 3 months' "long service leave" on full pay, and the same after 20 years. Absence on military duty, postgraduate study or illness is not counted against the nurse. Uniforms and stockings are supplied and laundered free by the employer. Nurses required to travel to a centre for examinations have their fares refunded.

Student nurses are precluded from doing the following tasks unless the employer has been unable, after reasonable efforts, to find domestic staff: sweeping, polishing floors, windows, baths, etc.

WM. C. GIBSON

## ABSTRACTS FROM CURRENT LITERATURE

### Medicine

**The Management of Tetanus with Curare: Report of Two Cases.** Ory, E. M., Hay, E. C., Prado, J. L. and Selye, H.: *Am. J. M. Sc.*, **215**: 448, 1948.

Pointing out the risk of overdosage and the risk of pulmonary complications in the use of large amounts of sedatives in the symptomatic treatment of tetanus, these authors reviewed the published experience in the use of curare for this purpose. Variation in potency of the available preparations has complicated its use in the past of the available preparations has complicated its use in the past but there is now a preparation standardized by biological assay to be had and this paper details its successful use in two cases. The name of the preparation is "intocostin". The name of the manufacturer and other details are not given.

In each of the two cases the patients were suffering from severe, generalized, muscle spasms on admission but these proved responsive to the use of the curare which was given intravenously or intramuscularly at intervals dictated by the patient's response. The injections were not always adequate to completely abolish the spasms but were always able to give subjective relief and useful degrees of muscle relaxation. In one case the amount necessary to secure relaxation of a laryngeal spasm resulted in paralysis of the tongue which necessitated its being secured forward in the mouth, this being the only untoward event in the treatment of the two cases. The authors point out, however, that neostigmine or physostigmine should always be on hand in the event of over-dosage. Atropine proved helpful in dealing with mucous secretion in the air passages.

The use of curare is, of course, of assistance only in the general management of the case; the essential feature of treatment is the use of adequate amounts of tetanus antitoxin.

G. A. COPPING

**Lobar Adenocarcinoma of the Lung Simulating Pneumonia.** Silverman, G. and Angrist, A.: *Arch. Int. Med.*, **81**: 369, 1948.

Two cases of the above disease are presented, in which the diagnosis was not made until autopsy. One in a woman of 31 and the other in a woman of 73. Also no primary lesion was found outside the lungs. Both cases had been tested for tuberculosis with negative results. In the discussion some interesting points came out. It has been rather taken for granted that cases where adenocarcinoma was found at autopsy were always metastases. In the cases presented, the carcinoma seemed to be lining the alveoli and the finer bronchioles and not to have their origin in a bronchus. Another possibility is multiple simultaneous points of origin in what might be called distal parts of the lung. There are apparently many cases of adenocarcinoma of the lung which have been diagnosed as lobar pneumonia without challenge. Obviously this is unsatisfactory if these people have a malignant condition. The authors conclude their article by discussing the histology and the pathological possibilities as regards origin.

P. M. MACDONNELL

**The Use of the Rice Diet in the Treatment of Hypertension in Non-hospitalized Patients.** Contratto, A. W. and Rogers, M. B.: *New England J. Med.*, **239**: 531, 1948.

This report covers the first six months of study of a group of private, non-hospitalized patients with essential hypertension treated with the rice diet. Of the 55 patients started on the diet 18 failed to co-operate and an additional three patients were excluded from the study because of the development of coronary occlusion

soon after the diet was instituted. Failure of co-operation was experienced with all obese patients. Of the 34 hypertensives who followed the regimen the blood pressure failed to show significant improvement in ten cases.

The strict rice and fruit diet, as devised by Kempner, was maintained for about three months and was then gradually modified depending upon the individual response. All patients lost weight markedly during the first ten to twenty days on the diet but a stable level was reached where further loss did not occur. Weakness and mental depression were common early in treatment but these symptoms gave way to a subsequent feeling of improvement over the period preceding therapy. Urinary chloride determinations on twenty-four hour specimens were obtained every second week. This not only served as proof that the patient was adhering to the diet but was considered of great psychological value in the prevention of deviation from the prescribed routine. Once a patient had advanced from the strict rice diet to any form of modification it was found practically impossible to get him to revert to the stricter regimen. For this reason no change should be made until satisfactory improvement in the blood pressure has occurred.

The authors are of the opinion that the rice diet offers the greatest hope in the medical treatment of essential hypertension. The reason for the improvement which it brings about is not known but is probably related to the low sodium intake.

NORMAN S. SKINNER

### Surgery

**An Unusual Case of Multiple Malignancy.** Gagnon, E. D.: *Brit. J. Surg.*, **35**: 435, 1948.

A 71 year old man died with a mass in the right abdomen 2½ years after a negative laparotomy for a doubtful lesion of the hepatic flexure. At autopsy, there was a large adenocarcinoma of the ascending colon and a seminoma of the right testicle. Metastatic seminoma involved the peritoneum, mesenteric lymph nodes, cæcum and liver. Metastatic adenocarcinoma also involved the liver, mesenteric glands and portal vein. Two varieties of secondaries were thus side by side in the liver.

BURNS PLEWES

**Portacaval Anastomosis.** Blakemore, A. H.: *Surg., Gyn. & Obst.*, **87**: 277, 1948.

The operation of portacaval or splenorenal shunt is rapidly becoming established and the mortality in 40 operations was 5. The diseases associated with portal hypertension in relation to the results of operation are discussed. Schistosomiasis of the liver is very common in some parts of the world, and the cause of death is often due to complications of portal hypertension. The cases are good operative risks and portacaval shunt protects them against lethal haemorrhage and relieves ascites. Chiari syndrome or thrombosis of the hepatic veins was relieved in the one case operated upon, whereas it has been considered a fatal disease. Banti's syndrome is the commonest syndrome with portal hypertension in this country and those cases with œsophageal varices or a history of gastrointestinal haemorrhage are candidates for the operation.

Cirrhosis of the liver and portal hypertension is rapidly becoming better understood but it is the portal hypertension rather than the prothrombin derangement that is the important factor in lethal haemorrhage. Portacaval shunt will protect against the severe gastrointestinal haemorrhage which is mortal to 50% of such cases. Although ascites disappears after the operation, it is not considered a primary indication for the procedure. When medical treatment fails in clearing the ascites, it is due to too severe liver damage or excessive portal hypertension. In the latter group portacaval shunt is recommended when treatment fails if œsophageal varices are demonstrated.

These patients die after repeated paracentesis from "wasting ascites" but are usually good operative risks. Posthepatitis cirrhosis is becoming more common. If liver function is reasonably good and oesophageal varices are demonstrable, portacaval shunt is recommended because other treatment at this stage seldom checks the downhill course. BURNS PLEWES

**Posterior Gastroenterostomy for Organic Pyloric Stenosis.** Reid, H. and Marcus, R.: *Brit. J. Surg.*, 35: 304, 1948.

A review of a consecutive series of cases of organic pyloric stenosis complicating old duodenal ulcer done at the Liverpool Royal Infirmary between 1928 and 1938 includes 80 cases. The operation was a posterior no-loop, vertical isoperistaltic gastroenterostomy with a large stoma. 2% died from operation, one from pulmonary embolism and one from peritonitis; 9 died from other causes in the 10 years after operation; 98% of the patients alive over 10 years after operation are considered to have satisfactory results.

Since 90% of the ulcers proximal to the pyloric canal but within an inch of it are malignant, subtotal gastrectomy should always be done for ulcers in the pyloric antrum. The lower morbidity and mortality of gastroenterostomy and the freedom from digestive disturbances, commend it for the case of pyloric obstruction without hyperchlorhydria. Pyloric stenosis is virtually always duodenal stenosis. A low acid curve in the fractional test-meal test is a necessary prerequisite for gastro-enterostomy. With proper pre-operative and postoperative care, including correction of chloride balance, dehydration, raised non-protein nitrogen and alkalosis and gastric lavage, the operation need not be deferred because of too great operative risk, and the mortality should be less than 1%. BURNS PLEWES

**Surgery of Lumbar Intervertebral Disk Protrusion.** Falconer, M. A., McGeorge, M. and Begg, A. C.: *Brit. J. Surg.*, 35: 225, 1948.

After a review of 100 consecutive cases operated upon, the authors conclude that while all cases of disk protrusion cannot be completely cured, the results are largely conditioned by factors within the control of the surgeon, and are comparable to the results of knee cartilage operations. All patients with severe sciatica and/or low back pain should first be treated by immobilization for at least one month. Investigation may then reveal a few cases of cauda equina tumour, or granuloma or neoplasm of the spine. Most who still have sciatica after a month in bed will be found to have disk lesions and should have an operation. The most constant sign is aggravation of pain by coughing, limitation of straight leg raising and rigidity of the lumbar spine. Absence of ankle-jerk, sensory disturbances, globulin may indicate the level of the lesion. Myelography is very helpful.

Adequate exposure and removal of all loose and readily detachable tissue from within the pathological disc are emphasized in describing the technique of operation. Graduated exercises and training to strengthen the erector spinae are important during convalescence. Spinal fusion is seldom warranted. If symptoms persist after operation, re-exploration must be considered. BURNS PLEWES

### Obstetrics and Gynaecology

**Calcium and Phosphorus Metabolism in Pregnancy.** Obermer, E.: *J. Obst. & Gyn. Brit. Emp.*, 55: 142, 1948.

The mean maternal loss or gain of calcium and phosphorus throughout pregnancy for 48 healthy pregnant women, divided into 7 groups, is given in tabular form. Forty of these women were primiparæ. Of the

40, 36 had normal labours. The mean duration of the 3 stages of labour, for these 36 women, divided into groups, are also given in tabular form. A graph is given showing the calcium and phosphorus balances of each individual in each group plotted against the duration of the 2nd stage of labour. There is a tendency for the 3 lines (representing plus or minus calcium balance, plus or minus phosphorus balance, and the duration of labour, respectively) to follow each other. This tendency confirms clinical experience that a positive calcium balance during the last 3 months of pregnancy usually results in a shorter labour. The mean fetal head measurements per group are given for 28 out of the 48 cases. There is no significant difference between the measurements for the control and the supplemented groups. P. J. KEARNS

**Determination of Pregnanediol.** Kullander, S.: *J. Obst. & Gyn. Brit. Emp.*, 55: 169, 1948.

Guterman's qualitative method of determining pregnanediol, intended in the first instance to serve as a diagnosis of pregnancy, has been modified so that it permits a quantitative colorimetric estimation of the excretion. It has been tried out in altogether 430 determinations in 338 cases. Both the original Guterman method and the quantitative measurement of the excretion of PD are uncertain as tests of pregnancy. In roughly 38% the reaction was negative (89 determinations of pregnant cases). The quantities of pregnanediol excreted during pregnancy are often so small that excretions of the same magnitude are often encountered in non-pregnant patients with amenorrhœa. "Positive" reactions may be obtained during the menstrual cycle. The positive proof of pregnancy is more reliable than the negative exclusion of pregnancy. A positive reaction accompanied by amenorrhœa suggests pregnancy. In the prognosis of threatened miscarriage the Guterman test is unreliable. In 17 cases examined, a correct prognosis was obtained in only 7. P. J. KEARNS

### Facts and Fantasy in the Study of Female Infertility.

Stallworthy, J.: *J. Obst. & Gyn. Brit. Emp.*, 55: 171, 1948.

In the author's series of 1,000 consecutive cases of infertility, at the first examination it was found that defective male secretion was present in 35% of the men examined and defective ovulation in 28% of the women examined. It is noted that defect in either male secretion or ovulation was frequently of temporary duration and that the corrected figures after repeated examinations would be much lower. Reference to the results published by other workers show that the incidence of complete tubal occlusion varied from 26 to 50%. In the author's series the incidence of apparent blockage was 21.6%, but by the use of spasmolytics such as nitroglycerine it is shown that the incidence can be reduced to 12.8%, and in a smaller series of 171 patients investigated at the end of the series the apparent rate was 9%. The suggestion is made that even this rate of 9 to 12% is probably too high, and that it includes patients with apparent occlusion due to uterotubal irritability unrelieved even by nitroglycerine. P. J. KEARNS

**Hæmoglobin Values in Pregnant Women.** Sadovsky, A., Koch, W., Toaff, R. and Kaplan, D.: *J. Obst. & Gyn. Brit. Emp.*, 55: 152, 1948.

Mean hæmoglobin levels in pregnant women in Jerusalem are 12.4 g. up to the 6th month and 12.22 g. in the last trimester of pregnancy. Pregnant women from Semitic communities in Palestine have lower hæmoglobin levels than comparable groups of Ashkenazie women, mainly during the first and second trimesters. For one group of Semitics it was shown that

increasing age, irrespective of parity, depresses the haemoglobin level. Student nurses in Jerusalem exhibit slightly higher haemoglobin levels than comparable groups in Edinburgh and Aberdeen. P. J. KEARNS

**Mesodermal Mixed Tumour of Uterus.** Blumer, C. E. M. and Edwards, J. L.: *J. Obst. & Gyn. Brit. Emp.*, 55: 309, 1948.

A polypoid tumour, removed with, and arising from, the uterus of a woman 73 years old, revealed histological evidence of malignant rhabdomyomatous and chondromatous elements. It is submitted that it constitutes a "mesodermal mixed tumour", within the restricted definition of the recent literature, which is briefly reviewed. P. J. KEARNS

### Pædiatrics

**Isolated (Fiedler's) Myocarditis.** Jones, H. E. and Marshall, A. G.: *Arch. Dis. Child.*, 23: 201, 1948.

A fatal case of idiopathic (Fiedler's) myocarditis is described in a male infant, who experienced no illness until 9 months of age, when he became fretful and refused food. For the subsequent weeks until death at 11 months he was pale, listless and vomited most days. He was never febrile. Two days following onset of symptoms he was given sulphonamide (amount unknown, but continued for five days). Five weeks after onset he was hospitalized, and positive findings were slight cyanosis, cardiac and liver enlargement. Laboratory findings: red cells 3.8 million; Hb. 8.6 gm.; white blood count 9,300; no acetone in the urine; a small rise in the blood-sugar curve following adrenalin injection. He had periodic attacks of dyspnoea and died in a severe episode of dyspnoea.

The main findings at autopsy were: general dilatation of auricles and ventricles with a thickening of their walls, and gross thickening of the endocardium of the left auricle. The liver showed the appearance found in chronic venous congestion. No glycogen was found in specifically stained portions of the liver, spleen or pancreas. Sections from auricles and ventricles, mitral valve and papillary muscle all showed a diffuse infiltration of the myocardium by lymphocytes with little alteration of the muscle cells.

Two histological types of isolated myocarditis are described—the diffuse lymphocytic and the granulomatous. This case is considered to be an example of the former. To be considered in the differential diagnosis are diphtheria, rheumatic fever, beri-beri, sulphonamide myocarditis, trichiniasis, glycogen disease. The cause of the myocarditis is unknown. No treatment has proved effective. ARNOLD L. JOHNSON

**Treatment of an Infant with Paroxysmal Auricular Tachycardia.** Moore, R. L.: *Pædiatrics*, 2: 266, 1948.

A case of an infant with paroxysmal auricular tachycardia is described. The infant was well until 7 or 8 days of age, when he began to experience episodes of cyanosis, rapid breathing and restlessness. At 20 days of age there were definite signs of heart failure and marked distress. He was digitalized by mouth with the tincture, calculating the dose as 0.2 c.c./kg. After 0.6 c.c. were given there was rapid improvement, and the greatly enlarged heart returned to normal size. He was maintained on 0.1 c.c. daily, but within 2 to 3 weeks, symptoms recurred, and paroxysmal auricular tachycardia, confirmed by electrocardiogram, was diagnosed. Increased dosage of digitalis was without effect, and 0.5 mgm. of acetyl-beta methylcholine (mecholyl chloride) was given intramuscularly. Within 30 seconds the baby became pale and cold, salivated profusely and had laboured respirations. The heart rate suddenly slowed from 270/min. to 40-50/min.; 0.065 mgm. atropine was given intramuscularly with improvement in the infant's condition in a few minutes. The pulse rose to 140/min.

and stayed there. The infant was maintained on 0.2 c.c. of the tincture of digitalis daily. At 3 months of age another paroxysm occurred. Increased digitalization was not effective and 2.0 mgm. of mecholyl was required to stop the attack, with the alarming side effects just described. Three weeks later, another episode occurred and quinidine was tried orally starting with a dose of 20 mgm. and increasing by 20 mgm. each 2 hours until, with a dose of 120 mgm., the attack subsided. Further attacks required up to 180 mgm. At the age of 5 months he had his last episode which required 200 mgm. quinidine for its control. Since this time to age at reporting of 25 months he has been well without evidence of cardiovascular abnormality.

The common errors in diagnosis are idiopathic dilatation of the heart, pneumonia and enlarged thymus. The clinical picture is fairly consistent and is characterized by restlessness, extremely rapid respirations and pulse, cyanosis and pallor, listlessness, vomiting and sometimes fever and leukocytosis. Etiology is unknown. Digitalis and quinidine should be tried first and acetyl-beta methylcholine kept as a last resort because of the violent reactions which may attend its use.

ARNOLD L. JOHNSON

### Industrial Medicine

**Physiology of the Bone Marrow in Relation to Industrial Intoxication. A Review.** Goldwater, L. J.: *Occup. Med.*, 4: 435, 1947.

In this article the author first describes briefly the embryology, anatomy and normal physiology of bone marrow. For practical purposes he considers examination of the peripheral blood picture the most effective means of studying the physiology of bone marrow. He stresses the importance of understanding what represents a normal blood picture. It is necessary to decide what is normal before one can judge what is abnormal. A table presents the normal haematologic standards as given in six standard textbooks; they show fairly close agreement. In the author's opinion a better understanding of normal ranges for blood values would dispel some of the confusion which appears to exist among physicians who deal with industrial poisonings. Another table lists a considerable number of toxic substances encountered in industry, which may produce directly or indirectly, disturbances in blood formation. It is well known that a variety of occupational poisons may produce variations in bone marrow structure and function.

Following this introduction the author discusses in considerable detail the effect of these occupational exposures. He reviews some of the things which are known, and points out some which are not known, in regard to the effect on bone marrow. Reference is made to existing literature dealing with the blood picture in the various industrial poisonings. The toxic substances whose effects are discussed, include the following: arsenic, cobalt, mercury, lead, manganese, selenium, thallium, vanadium, radioactive metals, benzene, toluene and xylene, other aromatic hydrocarbons, aniline, trinitrotoluene, nitrobenzene, aliphatic hydrocarbons, ethylene glycol monomethyl ether, chlorinated compounds, carbon monoxide, nitrous fumes and carbon disulfide. MARGARET H. WILTON

**Results of Influenza Vaccination in Industry During the 1947 Epidemic.** Baetjer, A. M.: *Indust. Med.*, 17: 171, 1948.

In this article are reported the findings of a survey conducted by the School of Hygiene and Public Health, Johns Hopkins University, to evaluate the effectiveness of influenza vaccination in industrial workers. During the 1947 influenza epidemic, the effect of vaccination with the influenza A and B vaccine, on the incidence of respiratory diseases, and on the absenteeism rates among their employees, was reported by a number of companies

located in various regions of the United States. Tables present the findings. One gives the incidence of respiratory diseases or influenza in the vaccinated groups as compared with the non-vaccinated groups; another shows the incidence of acute reactions to the vaccine. Reference is made also to a similar study conducted during that time at the University of Michigan, and to results reported for the Army personnel.

The data from six companies showed a lower rate of respiratory diseases or influenza in the vaccinated group as compared with the non-vaccinated group, whereas the rates from seven companies were higher or not significantly different in the two groups. Although the lower rates of respiratory illness in the vaccinated groups of some companies suggested a beneficial effect of the vaccine, examination of the data indicates that other factors were probably responsible for the differences. In the report of a study carried out at the University of Michigan the authors conclude that "the incidence of disease was no different in vaccinated and unvaccinated individuals".

The immediate reactions to the vaccine and the resulting lost time were reported from a larger number of companies. The incidence of acute reactions varied greatly. In some companies the incidence of mild reactions was quite high, but the percentage of employees who lost time from work was low. The data presented in this survey did not demonstrate a consistent reduction in sickness during the 1947 influenza epidemic as a result of vaccination. The author considers however that these studies should be considered only as preliminary in character. Their results do not imply that influenza vaccination will be of no value to industry in future epidemics. It is her opinion that as information concerning various strains of the influenza A virus becomes known and the technological problems associated with the preparation of the vaccine are clarified the effectiveness of the vaccine in different epidemics should increase.

MARGARET H. WILTON

## OBITUARIES

**Dr. Francis O. Anderson** died on October 18 in Sarnia, in his 76th year. Born in Montreal, he was educated at the former British and Canadian School, Lagachetiere Street, and at Bishop's Medical School, later amalgamated with the McGill faculty of Medicine, where Dr. Anderson on graduation became the gold medallist. A lifelong Freemason, he was a member of Antiquity and then of Waverley Lodges. He retired from practice five years ago and went to live at Sarnia. Dr. Anderson is survived by two sons and two sisters.

**Dr. Cyril Douglas Archer**, aged 56, died at his home in Fort William, Ont., on October 5. Born at Cobourg, Ont., he was educated there in the public and secondary schools. He graduated in medicine from Queen's University. In 1920 Dr. Archer moved to Fort William to be associated with the late Dr. R. J. Manion. A major in the Fourth Field Ambulance reserve, he was one of the original officers in the unit. He was a member of St. Andrew's Presbyterian Church; of Kaministiquia Lodge No. 548, A.F. & A.M.; of Superior Lodge of Perfection and of the Nanibijou Chapter of Rose Croix.

**Dr. Tancrède Bissonnette** est décédé à Montréal le 6 octobre, à l'hôpital Royal Victoria, à l'âge de 58 ans. Il exerça sa profession de médecin durant 34 ans dans la paroisse St-Jean-Baptiste. Il laisse sa femme, huit frères et deux sœurs.

**Dr. William Brown Boyd** died at his home in Coldwater, Ont., on October 26, 1948. A funeral service was held in Coldwater and interment at Uxbridge, Ont.

**Dr. James E. M. Carnwath** died at his home in Riverside, N.B., on October 10, after a long period of ill health. He was born at Riverside in 1874 and lived there for the greater part of his life. He was an honour graduate of McGill University in 1900 and a short time later he returned to his native community and carried on an extensive medical practice for 46 years. He was considered one of the finest surgeons in the province and was honoured with a senior membership in the Canadian Medical Association. He was chairman of the Riverside School Board for a number of years. He is survived by his widow, two sisters and one brother.

**Dr J.-A. Champagne** est décédé à Montréal le 5 octobre à l'âge de 72 ans. Il laisse une fille, un frère et deux sœurs.

**Dr. W. Gordon Cornett** died on October 25 at the Mountain Sanatorium, Hamilton, after a long illness. He was born at Lansdowne, attended school in Kingston and graduated from Queen's University in 1921. He served a year's internship in Hamilton General Hospital, then studied in the Lutheran Hospital, Brooklyn. In 1925 he joined the Staff of the Mountain Sanatorium. He practised in Hamilton from 1929 to 1942, and became second on the Staff in Medicine at the General Hospital. In 1937 and 1938 he studied in Edinburgh and on his return to Hamilton became Consultant in Internal Medicine. For several years he was on the Hamilton Board of Education. Two brothers, Dr. A. D. Cornett of Oshawa and Dr. J. S. Cornett of Kansas predeceased him.

**Dr. C. J. Devins** died at his home in Aurora, Ont., on October 11, 1948. He had been ill for six months. He was born in Heathcote, Ont., in 1895. He graduated from the University of Toronto in 1919 and began practice in Aurora in 1922. Dr. Devins was Coroner for North York and for twenty-five years was chairman of the Public School Board. He was a strong supporter of organized sports, an active church member, an enthusiastic keeper of bees and made a hobby of raising sheep. He is survived by his widow, a son, a daughter, his mother and a brother.

**Dr. Thomas F. Donnelly**, aged 74, died suddenly in an Ottawa Hospital, October 9. He was a former Liberal member of the House of Commons for the Saskatchewan constituency of Wood Mountain. Survivors include his widow, three daughters and one son.

**Dr. William Ross Fraser**, aged 51, of Regina, died on September 20 in hospital. Dr. Fraser was born at Reston, Man. He served in the medical corps, C.E.F. during the First World War. After his discharge he moved to Edam, Sask., in 1921, where he practised until 1936. He then went to Kisbey, Sask., and later to Arcola. In 1942 he enlisted in the medical corps and served overseas. He was discharged with the rank of captain in 1945 and returned to his practice at Arcola. In 1946 he came to Regina and had lived in the city since. He was a member of the B.P.O. Elks and the Canadian Legion. Dr. Fraser is survived by his widow; five sons, two brothers, three sisters and his parents.

**Dr. William J. Gibson**, aged 52, died at his home in Brockville on September 28. He was born at Gananoque and graduated from Queen's University, his studies being interrupted by service overseas as a surgeon sub-lieutenant in the Royal Navy. During the Second World War he was again on active service in Canada as a captain in the R.C.A.M.C. He also pursued postgraduate studies in Vienna and was widely-known as a surgeon in this area. He is survived by his widow and one son.

**Dr. Morris Korman** of Timmins, Ont., died on June 8. He graduated in medicine from the University of Toronto in 1938.

**Dr Octave Lacroix**, de Trois-Pistoles, médecin bien connu, est décédé le 18 octobre à l'Hôpital du Saint-Sacrement, à Québec. Il était âgé de 65 ans. Né à Québec il avait fait ses études au collège de Lévis, au séminaire de Québec, et à la Faculté de médecine de Laval, où il fut diplômé en 1908. Il pratiqua d'abord la médecine à la Baie-d'Hudson, pendant quelques années. En 1919, il s'installa à Trois-Pistoles, où il exerça sa profession.

**Dr Paul Lafond**e est décédé à Québec, le 9 octobre, à l'âge de 33 ans. Il laisse outre son père et sa mère, deux frères et une sœur.

**Dr Léopold Lane-Charpentier**, ex-chirurgien en chef de l'hôpital Ste-Croix, est décédé récemment à Drummondville à l'âge de 64 ans.

**Dr. William Arthur McCarthy**, aged 79, died at the House of Providence, Kingston, on September 23. He was one of the best known medical men in Kingston and had practised there for many years. He was born in the Township of Golburn, near Kemptville, and received his early education there, obtained his Normal School certificate and taught near Ottawa for three or four years. Following that he came to Kingston and entered the Faculty of Medicine at Queen's University and graduated in 1897. He first practised at Oceola, near Pembroke for two years and then at Wolfe Island until 1906 when he returned to Kingston. He continued his practice here until eight years ago when he retired. He was on the staff of the Hotel Dieu Hospital and was instrumental in the establishment of the obstetrical service at that institution. During the First World War he was a major in the old 47th Regiment. He served as health officer at Barriefield Camp and was medical officer for the transportation of troops to Valcartier before they proceeded overseas. He was a warm supporter of the Liberal Party and also took an active part in civic affairs, serving as an alderman from 1910 to 1913, being elected by acclamation twice. He was a member of St. Mary's Cathedral and at one time was prominent in the local council of the Knights of Columbus. Surviving are two sons and two brothers.

**Dr. John Douglas McQueen**, late head of the Department of Obstetrics and Gynaecology of the Faculty of Medicine, University of Manitoba, died on October 17 at the age of 61. Two or three years ago he suffered from a coronary attack which to some extent limited his activities but he saw his patients at the Winnipeg General Hospital two days before his death. From the time of his graduation from Manitoba Medical College in 1909 he gave evidence of leadership. He was acting medical superintendent of the Winnipeg General Hospital, then took postgraduate work in the Women's Hospital of New York City. On his return to Winnipeg he engaged in practice and was a member of No. 4 Cavalry Field Ambulance. When war broke out in 1914 he joined the first contingent of the C.A.M.C. and served as captain with the 3rd Canadian Field Ambulance in France. In March, 1916, he returned to become commanding officer of the 11th (University) Canadian Field Ambulance. From 1917 to 1919 he was in command at Bushey Park Military Hospital in England and on his return was attached to the Soldiers' Civil Re-establishment. For his services in the field he was twice mentioned in despatches and received the D.S.O. He helped to organize the first prenatal clinic at the Winnipeg General Hospital and rose to full professorship in obstetrics and gynaecology in 1939, a post he held until his retirement in 1946. His activities were not confined to a narrow field. He was president of Manitoba Medical Association

and, for several years, chairman of the Maternal Welfare Committee of the Canadian Medical Association. He was also Vice-president of the Royal College of Physicians and Surgeons of Canada, and a Fellow of the American College of Surgeons, and Honorary President of the Manitoba Medical Students' Association. Dr. McQueen is survived by his widow and his daughter, Dr. Roberta (Mrs. R. W. Keys) of Toronto and two sisters.

These are the bare outlines of his career and they do not show the real character of the man. He shunned publicity and only his more intimate friends knew his thoroughness, his singleness of purpose and a devotion to high ideals which did not prevent him from being a real human being and a good companion. His truest reward was not in the honours bestowed upon him, but in the confidence and trust of his patients.

**Dr. J. A. O'Regan**, prominent physician and specialist died October 6 at the age of 55. He was born in Saint John, N.B., where he pursued his early education at St. Malachy's School. Attending McGill University, he graduated with the degree of M.D., C.M., in 1916. While pursuing postgraduate studies in Montreal, he enlisted and served in the First World War in Mesopotamia and India, as medical officer, R.A.M.C. Returning, he did further extensive postgraduate work in Montreal and New York. An ardent sportsman, he was a keen salmon fisherman on the Matapedia and was a yearly visitor to the city and province. Surviving are his widow, one daughter, one brother and three sisters.

**Dr. Frederick Alexander Ross** died in Barrie on August 11. His death was due to coronary occlusion. He was born in 1882. He was educated in Barrie, then graduated from the University of Toronto in 1903. He interned at Grace Hospital, Toronto. After two years in Parry Sound he joined his brother, the late Dr. W. A. Ross in Barrie in 1906. In 1915 he joined the Royal Army Medical Corps and served in England, France and the Mediterranean Area and later with the Army of Occupation in Germany. He was awarded a French decoration. On his return he studied in New York before returning to Barrie where he practised until his death. Dr. Ross was the last of four brothers who were all physicians.

**Dr. Ross Lester Shields** died at Sunnybrook Hospital on October 16, 1948. His death was due to coronary occlusion. Dr. Shields was born in 1889. He was educated at Mount Albert and Markham and later graduated from the University of Toronto in 1911. After internship at the Brooklyn General Hospital, he practised for a short time with the late Dr. McKinley in Port Hope, Ont. He left Canada in the fall of 1914 with the first group of Canadian doctors to join the Royal Army Medical Corps and served in the Mediterranean Area. On his return he was Registrar for nearly two years at Christie St. Hospital, Toronto. Dr. Shields had not been well since his overseas service but carried on his practice in Kitchener, Ont. The greater part of his work however was with the Mutual Life in Waterloo. He is survived by his widow, three daughters and two brothers.

**Dr. Robert A. Smith**, a native of Durham, Ont., but for the past half century or more a resident of Ohio, died September 30 in the People's Hospital, Akron, Ohio. Born in Durham he graduated from McGill University, Montreal, in 1897. He went to the United States almost immediately after his graduation and started practice in Ghent, Ohio.

**Dr. Samuel Sniderman** of Hamilton, Ont., died on June 23. He graduated in Medicine from the University of Toronto in 1929.

## NEWS ITEMS

### Alberta

We wish to congratulate Dr. Samuel Hanson, Director of Laboratories at the Edmonton General Hospital upon being made a Diplomate of the American Board of Pathology in pathological anatomy and also being elected to the Membership of the College of American Pathologists.

Dr. L. J. Patterson has joined the Parsons Clinic in Red Deer. Another new member is Dr. J. Mitchell formerly of Winnipeg.

At the recent convention of the American College of Surgeons held in Los Angeles the following Edmonton doctors were made Fellows: Drs. Stephen Parlee, John Lees, A. W. Hardy, O. Rostrup and from Calgary Dr. Donald Ramsay.

Dr. Frank Law has returned from Toronto where he has been taking special courses given by the University of Toronto; others attending the course were Dr. N. Holubitsky and Dr. P. P. Kaye.

The extension to the University of Alberta Hospital is getting under way; this will be an imposing and much needed addition to the hospital of which Dr. A. C. McGugan is the Superintendent.

Dr. A. E. Archer, founder and chief surgeon of the Lamont Hospital was honoured by the University Senate with an LL.D. degree at the recent fall convocation.

W. C. WHITESIDE

### Manitoba

A scholarship of \$5,000 in memory of Dr. Jon Stefansson of Winnipeg has been accepted by the senate of the University of Manitoba. Income from the scholarship is to be used annually to purchase ophthalmoscopes for worthy students in fourth year in medicine. Until his death in 1936, Dr. Stefansson practised medicine in Winnipeg and was a specialist in eye, ear, nose and throat. His daughter, Miss Martha G. Stefansson of Philadelphia, the only surviving member of the family, is awarding the scholarship as a tribute to her father's university. Dr. Stefansson came to Canada from Iceland as a youth. Only by working as a farm labourer during the summer and fall months and by remaining out of school for years at a time, was he able to complete his medical education.

There have been many additions to the list of Manitoba practitioners. Dr. W. M. Crawford, Glasgow '41, and Dr. I. H. Brown, Glasgow '47, are on the staff of Selkirk Mental Hospital. Dr. Reece Jones is a member of the staff of Brandon Mental Hospital. Dr. J. R. Seatliff has a municipal contract and practises at Baldwin. Dr. D. W. Burgess is at Treherne and Dr. Michael Strachan is associated with Dr. Bissett at Pine Falls; Dr. D. R. Bigelow, Man. '48, is with the Bigelow Clinic, Brandon; and Dr. Walter Maynard Shaw, Dalhousie '48, is with the Winnipeg Clinic.

Dr. E. I. Shapiro who graduated from the University of Toronto in 1943 has been appointed Teaching Fellow in Anatomy in the Faculty of Medicine, University of Manitoba.

Dr. William Watt with his wife and his three-year old daughter have gone to Neepawa where he will be provincial public health officer. Dr. Watt is a graduate of the University of Aberdeen and Mrs. Watt graduated as a nurse from the Aberdeen Royal Infirmary.

Dr. Archie Gilmour Gray, accompanied by his wife and small daughter recently returned to Winnipeg from Edinburgh where he received his degree of F.R.C.S.(Ed.).

The setting up of a hospital district comprising the town of Selkirk and the municipalities of St. Andrews and St. Clements was approved by the Selkirk town council on October 25.

ROSS MITCHELL

### New Brunswick

At the Annual Meeting of the Mirimachi Medical Society Dr. F. G. Wilson of Red Bank was elected President and Dr. R. MacKenzie, Secretary.

Dr. R. A. Gregory, of the staff of the Provincial Hospital, was the special speaker at the opening meeting of the Saint John Medical Society in September. His subject "Syphilis of the Nervous System" was enjoyed by a large attendance of doctors from Saint John and vicinity.

Dr. C. L. Gass, President of the New Brunswick Medical Hygiene Council spoke on "Mental Health" at the Annual Meeting of the New Brunswick Council of Women, held in Sackville.

Dr. V. A. Snow, of Hampton, attended the recent refresher course at Kingston, Ontario.

Dr. Geo. F. Skinner, of Saint John, represented McGill University, at the inauguration of Dr. A. W. Trueman as Principal of the University of New Brunswick.

The Canadian Bureau of Statistics announces that New Brunswick for the second successive year had the highest birth rate in the Dominion, with a figure of 36.2 per 1,000 population. It is confidently predicted that these splendid New Brunswick babies will assure a continuing supply of university presidents, bank presidents, and leaders in all walks of Canadian life.

Dr. Charles Kelly, who has been a member of the Medical Staff of the Saint John Tuberculosis Hospital, for some years, was recently appointed Superintendent of the Jordan Memorial Sanatorium, River Glade, N.B.

Dr. Austin M. Clarke, until lately the Superintendent of the River Glade Sanatorium, has been appointed by the Provincial Department of Health, as chief of the service of Health Planning and is to direct the Health survey of the needs of the province and to act as liaison officer of health with the department of the federal government headed by Dr. Jackson.

At the Autumn Convocation of the American College of Surgeons, held in Los Angeles, fellowships were awarded to four doctors from New Brunswick. Dr. R. B. Eaton, of Sackville, Dr. D. A. Thompson, of Bathurst, Dr. K. W. MacKenzie of Moncton, and Dr. J. M. Rice of Campbellton.

The October meeting of the Saint John Medical Society, was addressed by Dr. Allan Currie of Halifax. As was expected Dr. Currie's talk on Intestinal Obstruction was much enjoyed by a good audience. The practical approach to this subject of daily interest was appreciated and the classification offered was easy to follow and of value in diagnosis to both internists and surgeons.

Dr. H. A. Farris, has been elected President of the Saint John Art Club.

A. S. KIRKLAND

### Ontario

Toronto hospitals have received a grant of \$1,071,353 to cover part of the losses sustained during 1946 and 1947 for the care of indigent patients. It is estimated that this sum will cover 80% of these losses. The hospital claims were settled on the basis of costs of the Toronto General Hospital for the care of adult public ward patients. This hospital has the lowest cost per day of the city hospitals, amounting to \$4.92 in 1946 and \$5.91 in 1947.

Ontario's Federal grant for tuberculosis work is to be \$750,000; it is proposed to use \$400,000 of this to provide hospitals with equipment to x-ray the chests of all patients admitted for treatment of any condition. Reactions of hospital officials were not all favourable. Some said that they were short of space, others are short of staff; but it is thought that eventually every hospital will apply for the equipment.

Dr. A. B. Appleton, professor of Anatomy, St. Thomas' Hospital Medical School, University of London recently addressed the Physiological Society of the University of Toronto on "Posture". The Society also heard two addresses by Professor E. M. Brieger of the Strangeway Laboratory and the Department of Pathology, Cambridge University on "The Host-Parasite Relationship in Tuberculous Infection" and on "Assessment of Working Capacity in the Rehabilitation of Tuberculous Patients".

The meeting of District Number Two comprising the Counties of Brant, Waterloo, Wellington, Oxford, Perth, Huron and Norfolk was held at Galt. Dr. Kenneth Campbell formerly of the Department of Surgery, University of Michigan spoke on "Various Aspects of Renal Failure" and on "The Utilization of Lumbar Sympathectomy in Arteriosclerosis". Dr. Alexander Blain Jr. of Detroit spoke on "Intestinal Obstruction". Dr. S. W. Hoobler, Assistant Professor of Medicine, University of Michigan spoke on "Diagnosis and Management of Arterial Hypertension" and on "Utilization of the Technique of Right Heart Catheterization in the Study of Circulatory Disturbances". Dr. H. B. Van Wyk, Professor of Obstetrics and Gynaecology, University of Toronto spoke on "Victorian Legacy" at the dinner attended by the doctors and their wives after Sundown Hour at Kress Hotel, Preston.

Dr. Hilda Lazarus, principal of Christian Medical College, Vellore, India, recently visited Toronto. Vellore is a Christian coeducational medical college with an enrollment of 191 medical students of which 26 are men; most of the students are Christian, but a few non-Christians have been admitted. The teaching staff is made up of Indians, Scotch, English, Americans and Canadians. All teaching is in English. In addition to Dr. Lazarus' work at the medical college she is director of the Medical Centre at Vellore which includes a hospital, a rural health unit, the leprosy relief and the mental health work. Vellore is a city of 100,000 but the Medical Centre serves the surrounding country and villages. Dr. Lazarus is a graduate of Arts and Medicine of Madras, she took her conjoint in England in 1916 and afterwards her F.R.C.S.(Edin.). Joining the Women's Medical Service of India she was principal of Lady Willingdon Medical School, Madras, and later principal of Lady Harding Medical College for Women, Delhi, in time becoming chief medical of Women's Medical Service for India. During the war she was Assistant Director General of the Indian Medical Service Women's Branch holding the rank of Lieut.-Colonel for three and a half years; there were 450 medical women in uniform in this

service. The purpose of her visit to North America was to study nursing education methods before establishing the degree course in nursing in Vellore. Since the School of Nursing, University of Toronto, to quote the 1947 Rockefeller report is "one of the peaks of nursing training in the world" its staff gave her much practical help about the curriculum of the course she is going to establish at Vellore.

The Electron Microscope Society of America held its annual meeting at the McLennan Laboratory, Department of Physics, University of Toronto. During the two and a half days of the meeting about forty papers were given. Two of them originated in Holland, two in England and one in Shawinigan Falls, Quebec; all the others came from United States laboratories. The light microscope gives a magnification of 1,000 to 1,500 times, the electron microscope from 6,000 to 80,000 times. The living organism cannot be looked at, it must be dried. Those who work with the electron microscope are well-trained physicists with a flair for small things.

The American Diabetes Association whose president is Dr. C. H. Best has arranged for a Diabetes Detection Drive beginning in Diabetes Week, December 6 to 12. The increasing importance of diabetes mellitus in the North American population has been apparent to physicians for a number of years. Pilot surveys during and since the war have shown that a large number of patients have diabetes without knowing it. They may be protected against future complications of this condition if they can receive the benefits of recent discoveries, particularly in the field of dietary treatment and the newer forms of insulin.

The various urgent problems in diabetes are being attacked by the American Diabetes Association with a membership of 1,000 physicians of whom forty-two are Canadians. They are engaged in directing diabetic clinics, treating patients, teaching diabetes, and conducting research on the disease. The chief objectives of this Association are to improve the treatment of diabetes, to bring the newest knowledge of the disease to all physicians, and to encourage and support research in the field, and to increase knowledge of diabetes among the general public.

LILLIAN A. CHASE

Professor John McMichael, of the British Post-graduate School of Medicine, University of London, on his way to speak at London, Ont. and California, replaced the lecturer at one of the medical lectures at the University of Toronto and then spent Thanksgiving weekend in northern Ontario as the guest of Dr. Ray Farquharson and Dr. William Keith.

Dr. Tracy B. Mallory, Pathologist-in-chief of the Massachusetts General Hospital, Boston, gave the John A. Macgregor Memorial Lecture at the University of Western Ontario. This Lectureship was established in 1939 by friends of the late Dr. Macgregor, a former professor of medicine at that University. The first lecture was given in 1946.

A form of group insurance has been offered to and accepted by the Medical Staff of the Toronto Western Hospital. It is thought that other hospitals might be interested in it and information can be obtained from the Secretary of the Clinical Society at that hospital. This group insurance protection is open to members of the Clinical Society up to age seventy. Full benefits are paid for conditions non-confining to the home. Pre-existing ailments are covered. The premium is uniform to age seventy. No reductions in benefits after sixty are made. Coverage under age seventy cannot be cancelled or restricted. There is a uniform group rate saving of 25 to 50% according to age.

Physicians' Services Incorporated report 10,500 subscribers up to September 1, 1948. There are 185 groups in the Province of Ontario. This number was obtained in the first six months of operation; 2,150 doctors have signed agreements.

Among more recent appointments, the following are noted; Dr. R. P. Smith, Timmins, Ont. has been elected President of the College of Physicians and Surgeons of Ontario. Dr. John Sheahan of St. Catharines is Vice-President. Dr. W. W. Bartlett of Brampton was elected Counsellor of District No. 5, Ontario Medical Association; Dr. G. C. Ferguson of Port Arthur, Counsellor for District No. 10 and Dr. R. P. Walker of Prescott for District No. 7.

Dr. W. E. Henry, after twelve years as M.O.H. Weston has been appointed M.O.H. York Township. He succeeds Dr. C. A. Warren who served as M.O.H. York Township for many years.

Dr. J. I. Jeffs has left Toronto to become M.O.H. West Lincoln. He will live in St. Catharines, Ont.

Dr. W. T. Kendall, a graduate of Queen's University, practicing in Ottawa has been appointed a Coroner.

Dr. G. Q. Sutherland of St. Mary's, Ont. is Chief Medical Officer of the Wellington County Health Unit.

Dr. D. B. Westcott, Newmarket, Ont. has been appointed Coroner for York County.

Dr. P. A. Scott has been appointed Chief Medical Officer for Simcoe County Health Unit and will live in Barrie. Dr. Scott, a graduate of Queen's University had served in the First and Second Great Wars and holds the M.B.E. for his work in hygiene.

Dr. R. M. King of Manitoba will be Assistant Medical Officer of the Simcoe County Health Unit.

At the Annual Meeting of the Brantford General Hospital Medical Staff Association, Dr. Allan D. Riddell was elected President, Dr. F. D. Clarke, Vice-President and Dr. Arnold Rose, Secretary.

Flight Lieutenant W. W. McBain, Officer Commanding, Lynton Davies (Port Colborne) Squadron, Royal Canadian Air Cadets was elected Chairman of the Ontario Provincial Committee of the Air Cadet League of Canada.

Dr. Gordon B. White of Port Colborne, formerly on the Staff of old Grace Hospital, Toronto has received a unique honour in being one of the few Canadians to be made an Associate of the Royal Photographic Society.

Dr. A. R. Richards formerly of Cobourg has become a member of the Staff of the Ontario Hospital at Whitby, Ont.

Dr. A. E. MacVicar is now practising in Port Elgin, Ontario.

Dr. L. R. Hill, a graduate of the University of Toronto, having served overseas for five years and, on return, having spent more than a year with the Lockwood Clinic has commenced practice in Bruce Mines.

Dr. William Dunning Butt after internship at the Toronto Western Hospital has taken over the practice of his father the late Dr. W. H. Butt. Dr. W. H. Butt served Toronto for years on the Board of Education and later as Alderman. Dr. W. D. Butt is on the Staff of Runnymede Hospital, Toronto.

Dr. J. L. Akin has moved from Montreal to open a practice in his native city of Windsor, Ont.

Dr. A. J. Aubin after practising at Cornwall, Ont. for the past fourteen years has moved to St. Hyacinthe, Quebec.

Dr. Bruce Wilson, who recently married the daughter of Dr. W. Wray Barracough of Toronto has opened a practice in Coppercliff, Ont.

NOBLE SHARPE

Dr. Ramon Castroviejo of New York City and Dr. Lawrence R. Boies of Minneapolis, Minnesota will be the guest speakers at the combined Refresher Course in Ophthalmology and Oto-laryngology, University of Toronto, Faculty of Medicine, to be held January 24 to January 29, 1949. Dr. Castroviejo will lecture on Cataract Surgery and give a surgical clinic; Dr. Boies will speak on general problems of interest in the practice of Oto-laryngology.

### Quebec

Dr. Marcel Langlois, Quebec City, professor of paediatrics at Laval University, has been appointed by the Civil Service Commission as a paediatrics specialist in the child and maternal health division of the Department of National Health and Welfare.

Le professeur Claude Béclère, qui a illustré la gynécologie française par ses travaux sur l'hystéro-salpingographie, a visité les centres médicaux du Canada français et donné, sous les auspices de l'Institut scientifique franco-canadien, une leçon à l'Université de Montréal.

Montréal a aussi reçu le professeur Bernard Halpern, célèbre par ses découvertes de substances anti-histaminiques, et le docteur Paul Milliez, héros de la Résistance, deux fois lauréat de l'Académie de médecine et président d'honneur de la Fédération des étudiants catholiques de France. A l'Hôpital Saint-Luc de Montréal, où le professeur Roméo Boucher l'avait invité à donner un cours de perfectionnement médical, il a laissé l'impression profonde, non seulement de son dynamisme personnel, mais aussi de la vitalité de la médecine française actuelle.

Le comité médical préliminaire à l'érection d'un nouvel hôpital dans l'est de Montréal comprend les docteurs J.-F.-A. Gatien, Léopold Lamoureux, L.-A. Hébert, René Dionne, Viateur Archambault, Léonidas Parent et Claude de Grandmont. La construction de cet hôpital sera permise par des subventions des gouvernements fédéral et provincial.

At the Donner Building for Medical Research, which was completed this summer on the McGill campus, work has begun in four sections under the general direction of Dean Frederick Smith: Experimental Surgery, conducted by Dr. David W. MacKenzie; Gynaecological Cytology, Dr. J.-E. Ayre; Experimental Animal Psychology, Drs. D. O. Helob and H. E. Rosvold; Dental Research, Dr. D. P. Mowry.

During the week of October 18, Montreal was host to the 23rd annual Congress of Anaesthetists, which brought together members of the International Anesthesia Research Society and of the International College of Anesthesia. Dr. Harold R. Griffith, of Montreal, is president of the former organization.

Dr. J. R. McCorriston, third-year student in the Surgery Diploma Course at McGill, had the honour of representing his University at the Los Angeles meeting of the Congress on Fundamental Surgical Problems. He presented five papers on advances made in the McGill Department of Surgery, including a method of grafting skin tubes into the omentum.

PAUL DE BELLEUILLE

### Saskatchewan

Dr. Geo. R. Peterson and Mrs. Peterson left recently to reside in Vancouver. Dr. Peterson retired from forty-five years of active practice in Saskatoon. Before their departure Dr. and Mrs. Peterson were honoured at many functions.

Dr. G. F. Nelson retired recently as Medical Superintendent of Saskatchewan Hospital at North Battleford and is now residing at Victoria, B.C.

Dr. A. R. Coulter has been appointed Medical Superintendent of the Saskatchewan Hospital at Weyburn, succeeding Dr. F. S. Lawson, who accepted an appointment as Medical Superintendent at the Saskatchewan Hospital, North Battleford.

The Saskatchewan Government recently announced a work stoppage on the 500 bed University Hospital in Saskatoon, which was being built in conjunction with the new Medical School. The reason given for the suspension was building costs. The annual meeting of the College of Physicians and Surgeons of Saskatchewan passed a resolution asking the Government to resume building as the development of a first-class medical school was dependent upon adequate teaching hospital facilities.

Dr. J. T. MacKay and Mrs. MacKay have returned to Saskatoon after an extended visit with their daughter at Cooksville, Ontario.

The forty-first annual meeting of the College of Physicians and Surgeons was held in Saskatoon October 5-6-7, 1948. It was a very successful meeting and registration exceeded 225, which is well over a third of the registered physicians in the Province. The papers given by the C.M.A. speakers were of an excellent order and were well received. College business was brought up-to-date and another full, active year is anticipated. Tribute was paid to Dr. Robert George Ferguson on his retirement. The diploma of Honorary Membership was granted at the annual College dinner, and every member was spontaneously on his feet to do honour to Dr. Ferguson. G. GORDON FERGUSON

### General

Mass immunization with B.C.G. is being arranged for in Europe. The program is being carried out under the joint sponsorship of UNICEF, the World Health Organization, the Danish Red Cross, and Scandinavian Red Cross Chapters. Similar projects may be carried out later in North Africa, China, Southeast Asia and Latin America.

The program contemplates tuberculin-testing 40 to 50 million children in Europe and offering vaccination with B.C.G. to all found to be uninfected with tuberculosis. An initial grant of \$4,000,000 towards the work has already been made by the Children's Fund. The U.S. Public Health Service has sent to Europe two of its senior surgeons, Drs. Carroll E. Palmer and Lydia B. Edwards, to confer with the international staff engaged in this anti-tuberculosis work. They regard the project as the most extensive epidemiological study ever undertaken, and hope to learn from it a great deal about the prevalence of tuberculous infection.

Dr. F. B. Bowman of Hamilton was given a medal and certificate award of merit for a watercolour painting at the annual exhibit of the American Physicians Art Association in Chicago in June, 1948.

Cheelo University College of Medicine moved from Tsinan to Foochow in August and is now in process of settling into its new quarters and preparing to open the Autumn Semester on October 1. Pre-clinical work

will be carried on in the old Theological School building on Nantai, while the work of the three upper years will be done in the three mission hospitals, Union Hospital (American Methodist and American Board Missions), Christ's Hospital (C.M.S.) and Tak Ting Hospital (C.M.S.). Of these, the two former are situated in the city and the latter on Nantai. The co-operation of the staffs of these hospitals and the kind help and interest of the Foochow community and the Cheeloo alumni have greatly facilitated the setting up of the Medical College in its new surroundings.

**Fertility and Sterility.** A new journal, *Fertility and Sterility*, to be sponsored by the American Society for the Study of Sterility, is announced this week by the publishers, Paul B. Hoeber, Inc., Medical Book Department of Harper & Brothers. The journal will be devoted to original articles, reviews and abstracts on the clinical problems of sterility and impaired fertility. *Fertility and Sterility* will be published bimonthly, starting early in 1949. Each issue will be illustrated and will contain approximately one-hundred pages. Original papers on relevant topics should be addressed to Dr. Pendleton Tompkins, 450 Sutter Street, San Francisco 8, California.

Subscriptions will be \$7.50 per year (\$9.00 foreign) and should be sent to: Paul B. Hoeber, Inc., 49 East 33rd Street, New York 16, New York.

**International Congress on Rheumatic Diseases.** The first International Congress on Rheumatic Diseases ever held in the United States will take place at the Waldorf Astoria in New York City May 30 to June 3, 1949 inclusive. This seventh International Congress is sponsored by the International League against Rheumatism. The host is the American Rheumatism Association in co-operation with the New York Rheumatism Association. The Congress has the official sanction of the United States Department of State which will co-operate in the issuance of official invitations. This is an open meeting. Members of the International, the European, and the Pan American Leagues against Rheumatism as well as the Canadian Rheumatism Association, British Empire Rheumatism Council, the Heberden Society of London, and the ten state or city Rheumatism Societies affiliated with the American Rheumatism Association are especially invited.

**Research Grants and Fellowships** to be made available in 1949 by the Life Insurance Medical Research Fund. Applications for grants in aid of research on cardiovascular problems to begin in 1949 will be received by the Life Insurance Medical Research Fund up to January 15, 1949. Support is available for physiological, biochemical, and pathological research which bears on cardiovascular problems, as well as for clinical investigation in this field. Preference is given to fundamental research. It is expected that about \$500,000 will be awarded for these grants.

Applications for postgraduate fellowships for training in research in 1949-50 will be received by this Fund up to January 1, 1949. Preference is given to candidates who wish to work in the broad field of cardiovascular function or disease and to candidates who wish to work in institutions other than those in which they have obtained most of their experience. A doctor's degree (M.D. or Ph.D.), or the equivalent is required. The annual stipend varies, as a rule being between \$2,500 and \$3,500, with larger amounts in special cases. Approximately 12 fellowships will be available. Later in the year, the Fund will also offer a number of student (pre-doctoral) research fellowships for 1949-50. Both grants and fellowships will become available on July 1, 1949.

Further information and application blanks may be secured from the Scientific Director, Life Insurance Medical Research Fund, 2 East 103rd Street, New York 29, New York.

**Traumatic Surgery.** A complete course on the Surgery of Trauma will be conducted at Queen Mary Veterans' Hospital, Montreal, commencing January 7, 1949. Lectures will be given every Tuesday and Friday at 4 p.m. by the attending staff of the hospital, illustrated by pathological exhibits and lantern slides collected from World Wars I and II by the Canadian Army War Museum, and by more recent material gathered in this hospital in the past three years.

The purpose of this course is to stimulate an interest in traumatic surgery in those who have not had much experience in this specialty, and to acquaint everyone with the most recent advances in the treatment of trauma in all regions of the body. All practising doctors, interns and senior medical students are cordially invited to attend.

C. McG. Gardner, M.D., Director of Surgery, Queen Mary Veterans' Hospital, Montreal.

The American Urological Association through the Northeastern Section will conduct an intensive post-graduate course in urology lasting one week from January 3 through January 8, 1949, under the auspices of the School of Medicine, University of Buffalo. The whole subject of urology, including the basic sciences, anatomy, physiology, bacteriology, biochemistry and pathology of the urinary tract, will be covered by well-known teachers and clinicians from various clinics throughout the country. Clinics will be held during the week. For further information and application, write Dr. George E. Slotkin, Chairman, Medical Centre Building, 333 Linwood Avenue, Buffalo, 9, New York.

**ERRATUM.**—The following corrections should be made in the paper on "Bacterial Endocarditis in an 18-months old Infant" by Drs. M. J. Heron and S. G. Ross (p. 367, October, 1948). The sentence "In 5,250 reported cases of bacterial endocarditis of Kelson *et al.* . . ." should read "250 cases, etc." Also "A search . . . shows only one recorded case of endocarditis in infancy, treated with penicillin, etc."

## BOOK REVIEWS

**Contemporary Religious Jurisprudence.** I. H. Rubenstein of the Illinois Bar. 120 pp. \$2.50. The Waldain Press, Chicago, 1948.

The title conveys very little idea about the subject-matter. It suggests a form of Salmon's Law of Torts, with religion as its basis—a form of Clark's Biblical Law, brought up to-date to meet present-day needs, such as Leibell's Readings in Ethics, which contains the teachings of Roman Catholicism or a collection of Rabbinical Responsa which contain Talmudic statutes, ordinances and judgments modified to meet the present-day needs of the Jew. Such a work would undoubtedly be of more than academic interest to physicians. The problems of sterilization, abortion and mutilating operations are major examples. Alcohol is one of the minor. Actually, however, this book is none of these. It is an outline of civil and criminal laws with reference to fortune-telling, pacifism and faith healing—psychic healers, magnetic healers, mental healers, etc. The only chapter of any interest from a medical standpoint is that in which are outlined legal rights and responsibilities of Christian Scientists, etc.—Conditions under which Faith Healers are permitted to practise their art and, thus, when the law will and when it will not hold them responsible for consequences of their acts.

Though obviously such matters are of no practical interest to regular medical practitioners, the subject-matter would be interesting reading in moments of leisure were it not for the grammar. Legal works, at their best, because of their terminology and unavoidably

involved sentences, make difficult reading for the non-technically trained. When to this are added the numerous grammatical errors throughout the book, there remains little to recommend it to physicians.

**Encyclopaedia of Medical Sources.** E. C. Kelly, Associate Professor of Surgery, Albany Medical College. 476 pp. \$8.25. The Williams & Wilkins Co., Baltimore, 1948.

Dr. Kelly's book is partly the result of having once made a mistake in defining the exact location of McBurney's point. One would not like to see similar reparation made for all errors that appear in textbooks, but in the present case it has been worthwhile. Medical dictionaries do their best with medical eponyms, but these require a dictionary to themselves, and when, as Dr. Kelly has done, titles of original papers are added his work fills a longstanding need.

**History of Factory and Mine Hygiene.** L. Teleky. 342 pp. \$4.50. Columbia University Press, New York, 1948.

Dr. Teleky has traced the historical detail of industrial hygiene from its early and slow beginnings down to and including the intensive development during the recent war. The scope of the book has been limited to a summary of that hygiene of the plant and the mine which deals with safeguarding the dangerous trades. It is largely a study of the progress made in the control of accidents and occupational disease. The survey is restricted largely to those highly industrialized countries England, Germany and the United States. The history of the efforts of physicians, hygienists and humanitarians since the days of Pliny to protect workers against the dangers of their work is a history inspired by men imbued with scientific curiosity or a high degree of social consciousness. This history of the struggle to safeguard the health of the worker makes fascinating reading. For the medical historian the book, including a very comprehensive bibliography, will be most valuable. For those physicians, hygienists, sociologists or others interested in industrial health and hygiene it provides an excellent reference.

**Hallmarks of Mankind.** F. W. Jones, Sir William Collins Professor of Human and Comparative Anatomy in the Royal College of Surgeons of England. 86 pp., illust. \$2.50. Baillière, Tindall & Cox, London; Macmillan Co. of Canada, Toronto, 1948.

In this little book, made up of two lectures delivered in 1947, Dr. Wood Jones again states his somewhat unorthodox views on human evolution. On the basis of anatomical and geological evidence, he concludes that the forerunners of man broke off the main line of evolution much before the development of the anthropoid apes. He believes too that our upright posture is not a direct result of brachiation, but is similar to the type of upright posture seen in the bear. In support of these views he points out that many of the special characteristics of the anthropoids are missing in man and stresses the specific overgrowth of the premaxilla by the maxilla in man only. The book makes interesting reading to anyone at all interested in comparative anatomy, whether he agrees with the author in all respects or not.

**Life is for Living.** D. E. Cameron, Professor of Psychiatry, McGill University. 241 pp. \$2.75. Macmillan Co., New York and Toronto, 1948.

The author of this book, confronted daily by the seemingly endless number of patients who are seeking relief from symptoms due to emotional maladjustment, has written this book with the main object of stimulating people to think for themselves. Impressed by the fact that mankind appears to be groping through the maze of confusing and contradictory taboos and ide-

ologies of daily life, he offers "new and more effective ways of life management", free from the shackles of old myths and beliefs which should have been discarded a long time ago. Time and time again he emphasizes the need for constant restatement of values, and for the scrapping of old outworn concepts. "The hoarding of junk is a propensity which we share with the magpies and the monkeys." Following a presentation of the main needs and drives of people he discusses the formation of "anxiety and guilt", the relativity of "good and bad", "the price of myths" and the social implications of emotional maturity.

This book has been written for the man of today worried by today. It is a book which can safely be prescribed by the psychiatrist and medical man to a selected group of patients as a useful adjuvant to psychotherapy. There is little doubt that lay people and physicians who are encysted in rigid personality trends will not give this book its due. Conversely, people who are sufficiently mature to think for themselves, and who are aware of the healthy dynamics of social progress will find this book stimulating, and worthy of study. There can be no doubt that the author of this book is deeply sincere in his endeavour to provide an interesting stimulus to new concepts of living. His attempt to give forthright information and common sense suggestions concerning many of the pitfalls of daily life will provide very necessary reassurance to many patients suffering from psychogenic disturbances. It is to be hoped however, that the author will apply his very real clinical skill and extensive experience of the dynamics of human nature to producing a more extensive and searching volume.

The general public, and the avid student, and above all the medical profession, should be greatly stimulated by Dr. Cameron's concepts, as expressed in "Life is for Living".

**Medical Education.** F. Roberts. 172 pp. 12s. 6d. H. K. Lewis & Co. Ltd., London, 1948.

During the last forty years, Dr. Roberts observes, some improvements have taken place but medical education "has failed to keep pace with the great expansion of knowledge which has in the meanwhile occurred". Medical education has always been considered a dull subject; perhaps this is the main reason why it has received so little attention. Happily, this is not a dull book; it expresses in lively language, and in detail, the same criticisms of medical training which have been made, and forgotten, by so many students and graduates. If the faults are more clearly and convincingly described than the remedies it is, perhaps, because Dr. Roberts is more an observer than a participant.

The road from High School to practice is a long one. The premedical course, Dr. Roberts believes, is stuffed with useless learning such as Botany and much of Zoology and Inorganic Chemistry and lacking in the subjects which teach a student how to form and express ideas, such as Literature. If this failure to provide a liberal education is true of a country like England, or France, where there is an older cultural tradition, the situation must be—and in fact is—much worse in Canada and the United States; this may be why our medical papers are so often an indigestible mess with the ideas lost in semantic confusion.

The preclinical course should be revised. The student learns Anatomy by turning himself into an infarct of facts, most of which he happily discards before graduation, the important ones along with the academic ones.

Dr. Roberts should be commended for stirring up a little trouble. There seems to be a need for such books. In an era of change and of shifting values we can hardly be content to watch medical education being conducted according to the principles of the horse and buggy days.

**Surgical Urology.** G. de Illyés, formerly Professor of Urology and Director of the Clinic of Urology and Director of the Clinic of Urology in the Hungarian Royal Péter Pazmany University, Budapest. 2 vols., 679 pp., illust. 63/- net the set. Constable & Co. Ltd., London, W.C.2, 1942.

The publishers of this work state that "It was written in English by Professor Illyés and set up by Hungarian craftsmen. It was inevitable that certain errors in terminology and grammatical construction should have resulted." From the reviewer's point of view it is astonishing that a person writing in a language other than his mother tongue can use that language with such telling effect. The first chapter is a remarkable example of making each word count. In this chapter, symptomatology, the history of the case, and the physiology of micturition are discussed. Under these headings the author makes straight-forward statements which represent years of clinical experience, in a manner that would lead one to believe that such facts were common knowledge.

The surgical description of various operations are those commonly in use with some variations introduced by the author. The illustrations are a masterpiece of medical illustration. They are beautifully done, many in colour, and completely lacking in identifying labels, which most medical illustrators manage to crowd in, to the ruin of an otherwise good illustration. This is a good sound treatise on Urology, and highly recommended to all those with more than just a superficial interest in the subject.

**The Salicylates.** M. Gross, Research Assistant (Assistant Professor), Laboratory of Applied Physiology, Yale University; and L. A. Greenberg, Associate Professor, Applied Physiology, Yale University. 380 pp. \$6.00. The Hillhouse Press, New Haven, Conn., 1948.

After an introductory historical sketch the authors devote other chapters to the properties of salicylates, their fate in the body, pharmacology, toxicology and therapeutic uses of the various compounds. The final chapters deal with poisoning and the question of addiction or habituation. The bibliography is extensive and there is an excellent subject and author index. The book should serve as a valuable reference volume for investigators interested in analgesic drugs particularly the salicylates.

**Progress in Neurology and Psychiatry.** Vol. III. Edited by E. A. Spiegel, Professor and Head of the Department of Experimental Neurology, Temple University School of Medicine, Philadelphia, Pa. 661 pp. \$10.00. Grune & Stratton, New York, 1948.

This volume consists of a review of the recent advances in the field of neurology, neurosurgery and psychiatry and their basic sciences by recognized authorities in the various fields. It is presented in such a manner that any subject one might be interested in can easily be found. A brief summary of the articles is given. The reviews are of necessity, brief and for the most part not critical. The bibliography is well handled and one is always at liberty to refer to the original articles. When one considers the large number of journals published, one realizes what a useful purpose such a volume as this one serves.

**Psychiatry.** W. A. O'Connor, Medical Superintendent, Ashwood House, Kingswinford, Staffs. 380 pp. \$8.75. John Wright & Sons Ltd., Bristol; Macmillan Co. of Canada, Toronto, 1948.

The author has attempted to aid the beginner in psychiatry. The presentation is the routine, formalized, mechanical approach of a large number of similar texts. The author pleads for a dynamic approach to psychiatry, but he follows a rigid compartmentalized description of

personality disorders. The few case histories are extremely brief. When discussing treatment, the authors makes a short statement, recommending psychoanalysis. For psychoses, he mentions that the well known physical therapies are of limited value. At no time does the author make the reader aware of the greatest therapeutic weapon—the mutual interaction between the patient and the therapist. The author does have an interesting and rather complete history of each clinical syndrome. The glossary is adequate. Other than these two assets, the book is of extremely limited value. Most better known texts are more dynamic, present more clinical material, and contain some description of practical psychotherapeutic treatment and management.

**Stethoscopic Heart Records.** G. D. Geckeler. \$3.90. Columbia Masterworks Set M-735, New York, 1948.

In these days of highly developed techniques for recording and transmitting sound, what could seem more obviously feasible than to record heart sounds and murmurs on gramophone discs for teaching purposes. Yet this series of records is disappointing and may represent inadequacy of the technique. The "seagull" murmur and one other loud musical systolic murmur seem to have been recorded successfully. The loud sharp first sound of mitral stenosis does resemble what is occasionally heard with the aid of the stethoscope. But, the normal sounds, the blowing diastolic and systolic murmurs and the pericardial friction are all much lower in pitch than they must have been in these cases when heard by ordinary auscultation with the stethoscope. So much so, that what is announced in the narration as a blowing murmur comes to one's ear as a low pitched, coarse rumble. The third element of the cardiac cycle, which it is said will give the effect of gallop rhythm, proves to be not a dull thud or sharp sound, but a coarse rumble, a murmur no different from the pattern that follows, and in which a murmur is described. As might be expected, those murmurs which are described by the narrator as low pitched or harsh, prove to be rolling rumbling coarse murmurs, much lower in pitch than they could have been during ordinary auscultation.

Moreover, the narration leaves much to be desired. To say that during auricular fibrillation "the pre-systolic murmur, usually, but not always disappears" is confusing. A few sentences could be added and a clear explanation of this phenomenon could be achieved. It seems simple to use a case of mitral stenosis to demonstrate a loud sharp first sound, but the listener, especially the novice who would tend to use such gramophone records as a shortcut to learning a difficult skill, would wish to know that the murmur which precedes the sound is not a usual accompaniment of a loud sharp sound. It would be very difficult for a novice to make sense out of the various patterns of sounds and murmurs described in these records if one with a trained, interested "ear" finds most of them confusing. These records could be made more useful by narration which would follow the policy of describing each element in a given pattern of heart sounds and murmurs, instead of only one element such as the murmur, the first sound or the "gallop" alone.

**Textbook of Endocrinology.** Hans Selye, Professor and Director of the Institut de Médecine et de Chirurgie expérimentales Université de Montréal. 936 pp., illust. \$12.80. Université de Montréal, Montreal, 1947.

This is a general text book on endocrinology, covering both the fundamental scientific and the clinical aspects of the subject. There is an excellent introductory chapter on general endocrinology, discussing the general principles and methods of the subject. This is followed by a chapter on steroids, including their chemistry and pharmacological action. The remainder of the book is taken up with the individual glands, and each chapter deals with their

various aspects. There are excellent illustrations, portraying the appearance of patients with endocrine disturbances and also illustrations of histological sections of normal and abnormal tissues and of the morphological hormonal effects in the experimental animal. The clinical description of the disease states is clear, and is so arranged to be more readable as one section under each gland, rather than being distributed throughout the chapters. The author has presented his own point of view in many matters, feeling that complete impartiality is attainable and in any case makes for very dull reading. This method of presentation does not however obscure the clear presentation of the facts. In general it is an excellent text book with wide coverage and bringing together the facts in a manner hitherto not attempted.

**Acute Bacterial Diseases.** H. F. Dowling, Clinical Professor of Medicine, George Washington University; L. K. Sweet, Chief Medical Officer in Paediatrics and Infectious Diseases, Gallinger Municipal Hospital; and H. L. Hirsh, Assistant Professor of Medicine, Georgetown University. 465 pp., illust. \$7.25. W. B. Saunders Co., Philadelphia and London; McAinsh & Co., Ltd., Toronto, 1948.

In the preface of this book Dr. Dowling quotes "The old order changeth, yielding place to new". This is a good introduction to this very timely book in view of the vast changes that have taken place in the last few years since the advent of the sulfonamides, penicillin and streptomycin. It is also stated that the purpose of the book is to combine the new order of diagnosis and treatment with that which is worthwhile in the old order. This purpose has been successfully accomplished. The approach to the subject is that of precise diagnosis by clinical and bacteriological means. The latest method of therapy is then carefully detailed with the present prognosis given in comparison with that before the use of these recent agents.

The book is evenly balanced between clinical and laboratory methods of diagnosis while careful and worthwhile statistics are given to substantiate the results which should be obtained. It covers the whole field of the acute bacterial diseases with a differentiation from those virus diseases which might give a similar clinical picture. Possibly the reader will feel a desire that the virus diseases should be similarly covered. This book should be equally valuable to students, general practitioners and specialists. It should be readily available as a reference to all practising physicians.

**Brief Psychotherapy.** B. S. Frohman, M.D., with the collaboration of E. P. Frohman. 265 pp. \$4.00. Lea & Febiger, Philadelphia; Macmillan Co. of Canada, Toronto, 1948.

This book gives a clear and concise description of the clinical aspects of neuroses. The author, prior to specializing in psychiatry, was in general practice for many years and in such capacity was impressed by the number of patients who go from physician to physician seeking relief from symptoms which can only be alleviated by a sound knowledge of psychosomatic medicine. This book was written mainly as an aid to physicians in diagnosing and treating the psychological factors which underly functional disturbances. Stress is placed on the psychosomatic aspect of disease and the problem of neurosis is approached from the point of view of the physician, the psychotherapist and the patient. The therapy suggested is not restricted to any rigid and inflexible school of psychiatry but, being eclectic in nature, it avails itself of all practical means offered by the new advancements of psychiatry. This is a book for the practitioner. It can also be prescribed to a few selected patients as a useful adjuvant to psychotherapy. Oversimplification of the clinical material, and possibly also insufficient stress on the psychodynamics of the cases presented, may perhaps lead

the reader to the erroneous belief that psychotherapy is an unduly simple and brief procedure.

With the above qualifications this reviewer has no hesitation in recommending this book to the physicians who are interested in the psychosomatic aspect of disease.

**Changing Disciplines.** J. A. Ryle, Professor of Social Medicine in the University of Oxford. 123 pp., illust. \$3.75. Oxford University Press, London, New York and Toronto; McAinch & Co. Ltd., Toronto, 1948.

There may be some who will find the title of this little work somewhat unrelated to its contents. To those, however, who read the book carefully the title will seem a reasonably suitable one for a work made up of six chapters—five of which have been used as public lectures giving an outline of the aims of the Institute of Social Medicine at Oxford. Social medicine is not yet susceptible of definition because its horizons are so indistinct that even confirmed protagonists are sometimes unsure in attempting to trace its boundaries. To some extent social medicine is a residual definition since it claims all medical territory outside clinical medicine: it is to be considered as the medicine of families, groups, societies and populations in contradistinction to clinical medicine which is concerned with the individual.

The author, John A. Ryle, has long been known as one who has been able to pursue scientific inquiry without any loss of clinical common sense. His acceptance of the post of first Director of the Institute of Social Medicine in Oxford was almost a guarantee that, in its early days, the Institute would be guided along the path toward the practical and the attainable. If it failed its lack of success would not be due to rash guidance or to mental dullness. This does not mean that social medicine has an assured place of usefulness but Professor Ryle is convinced it has and he writes with cogency and urbanity in support of his belief that social medicine must survive or clinical medicine will perish.

From the utilitarian standpoint the book will be judged differently by those who envision a growth of social medicine and by those who can see only its collapse. There should, however, be an approving judgment from those who are anxious about the future of medicine and who are interested in learning of the forces which will set the course that ultimately will be followed.

**Clinical Endocrinology and Constitutional Medicine.** A. P. Cawadias, Endocrinologist to the Order of St. John Clinic. 372 pp., illust. 42/- . Frederick Muller Ltd., London, 1947.

This book covers clinical endocrine conditions including those of the thyroid and pancreas. His approach is described by the author (*vide p. 359*) as from the constitutional or Neo-Hippocratic point of view. This is interesting but does not lift the veil of obscurity from a difficult scientific subject. The biochemical and physiological approach, with which we are more familiar in North America, is given a somewhat secondary part in this book. The ten illustrations are line drawings of certain clinical types. Many of the references are to the author's or other European papers which are less frequently quoted in our literature. The book deserves a place in reference libraries but is not recommended as a standard text for the student-specialist or the practitioner.

**Coronary Heart Disease.** A. C. Ernstene, Chief of the Section on Cardiovascular Disease, Cleveland Clinic, Cleveland, Ohio. 95 pp., \$3.25. Charles C. Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1948.

Here, at last, is a concise monograph dealing with coronary disease, which every cardiologist will enjoy reading, and which will throw light on many confusing problems troubling the general practitioner. The latter will feel particularly rewarded for time spent studying

the contents, not only because the author states his arguments clearly, and in simple language, but also because his views are thoroughly modern. This book is an acceptable postgraduate course in a most important medical field, containing as it does, a wealth of information gleaned from leading articles of recent years. The references are carefully selected. One is left in no doubt as to terminology, receiving authoritative instruction in the use of such terms as coronary thrombosis, myocardial infarction, coronary failure, cardiac asthma, etc. Of particular interest to both general practitioners and internists, is the modern outline of treatment, including the use of anticoagulants in myocardial infarction. The chapter headings include angina pectoris, acute myocardial insufficiency, acute coronary failure, paroxysmal cardiae dyspnœa, heart block and disturbances of cardiac rhythm, congestive heart failure, the risk of anaesthesia, and surgical operation in patients with coronary disease. This text is highly recommended to all who are interested (and who is not!), in coronary disease.

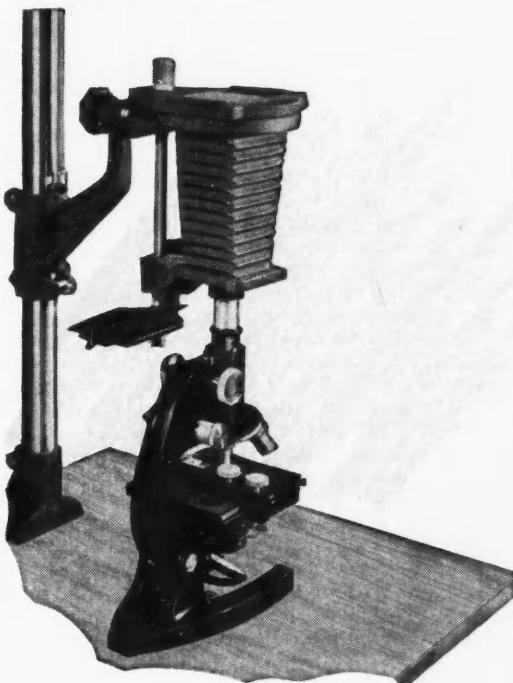
**Dermatoses Among Gas and Tar Workers.** W. D. Jenkins, Chief Medical Officer, South Metropolitan and South Suburban Gas Companies Ltd. 54 pp., illust. \$6.25. John Wright & Sons, Bristol; Macmillan Co. of Canada, Toronto, 1948.

The purpose of this monograph in the words of the late author is "to show that given certain conditions the distillation of coal and tar is not as productive of dermatoses as is generally supposed and that cutaneous cancer in particular, if it cannot be prevented, can at any rate be cured easily when it does occur, with a minimum of inconvenience and loss of working time." About 7,000 workers in the employment of one company, the great majority of whom had very long terms of employment and among whom there was a remarkably small personnel turn-over, furnished the material for the study, and the late author appears to have presented ample support for the thesis enunciated in the lines quoted above. The processes of gas manufacture and tar distillation are described simply but in detail, the manner and degree in which the workers are exposed to the products, the varieties of occupational dermatitis encountered and the neoplastic changes occurring are described and accompanied by numerous tables, diagrams and photographs. The latter are exceptionally good and well produced. Some confusion is introduced by the terminology, the word wart being used frequently to indicate a keratosis but never referring to a true verruca; the words papilloma, epithelioma and cancer are all used in such a manner as to leave the reader uncertain as to what the first two mean and why they are not called cancer in most cases. In the 10 photographs which conclude the book, 9 are obviously of clinical malignancies called warts and epitheliomata, but in no case called cancer. This book should be useful as a reference work in the libraries of compensation boards.

**Digestive Tract in Roentgenology.** Jacob Buckstein, Assistant Professor of Clinical Medicine, Cornell University Medical College; visiting Roentgenologist (Alimentary Tract Division), Bellevue Hospital, New York City. 889 pp., 1030 illust. \$18.00. J. B. Lippincott Co., New York, Montreal, 1948.

The book covers the entire digestive tract in a truly comprehensive manner. The details of proper investigation of the various parts of the gastrointestinal tract are accurately described and normal and abnormal findings fully illustrated. Normal anatomy and physiology of the various portions of the tract are used as an introduction to the consideration of normal and abnormal radiological findings. The radiological findings are correlated with clinical histories in a manner which is most instructive. The text is profusely illustrated, with excellent reproduc-

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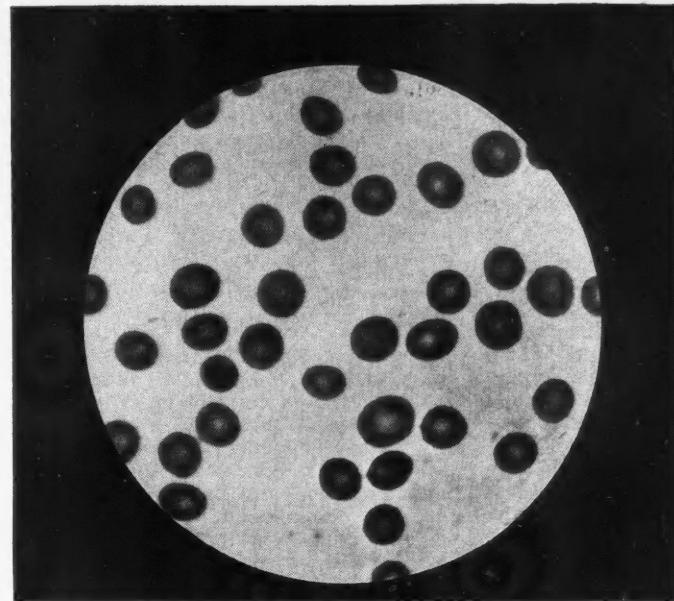


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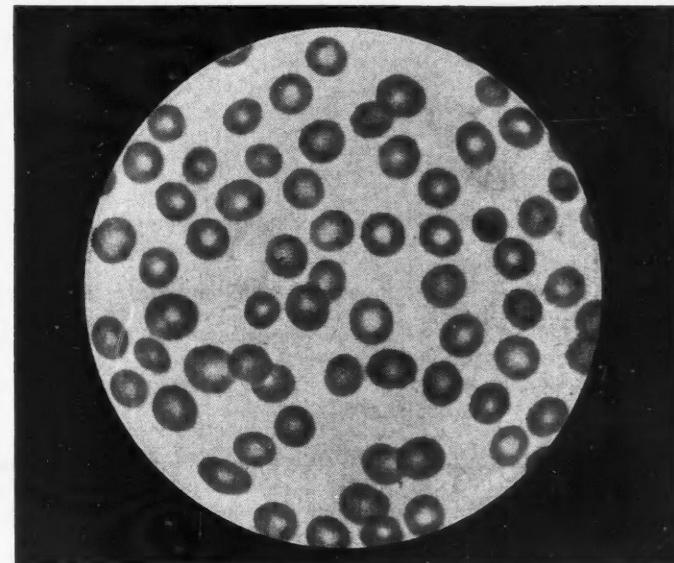
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tions of radiographs in original densities. This text should be on the shelf of every diagnostic radiologist and its study by physicians and surgeons will broaden their understanding of gastro-intestinal radiology, its possibilities and its limitations. A truly excellent book.

**Epilepsy.** Proceedings of the Association Held Jointly with the International League against Epilepsy, December 13 and 14, 1946, New York. Vol. XXVI of Research Publications. 654 pp., illust. \$12.00. The Williams & Wilkins Co., Baltimore, 1947.

Since the days of Hippocrates and the "Sacred Disease", epilepsy has been one of the most challenging problems in medicine. Modern research in epilepsy has been largely a development of the last twenty or thirty years, and this volume will undoubtedly remain as a landmark in the slow and difficult path of progress toward full understanding and control of this scourge of mankind. This book is not in any sense a summary of our present knowledge of epilepsy. It is a series of 45 individual papers presenting the results of recent research in various aspects of epilepsy. There are several contributions to the problems of heredity and pathology. There are a number of interesting experimental studies dealing with the origin and transmission of the electrical discharges within the brain, including work by Penfield, Jasper, and Fortuyn of Montreal. There are a number of detailed studies of brain chemistry in relation to epileptogenic lesions, both in man and in the monkey. Considerable attention is paid to electroencephalographic studies, and the assessment of a number of new drugs, including mesantoin and tridione, is reported. Five papers are devoted to the effects of war on epilepsy, dealing particularly with the problem of post-traumatic epilepsy. Finally, there are four papers dealing with psychological-social aspects of the epilepsy problem. It cannot be said that many striking discoveries are recorded here, but the volume gives a good cross section of the research work being done by the men in the forefront of epileptic research. This book should be in the hands of every neurologist and psychiatrist who deals with epileptic patients.

**Failures in Psychiatric Treatment.** Edited by P. H. Hoch, Principal Research Scientist (Psychiatry) New York State Psychiatric Institute. 241 pp., illust. \$4.50. Grune & Stratton, New York, 1948.

This symposium consists of fifteen papers on various aspects of treatment in psychiatry and concludes with a summary by the editor. The opening papers are concerned mainly with psychotherapy and failure in psychoanalysis and taken together constitute a good review of many current psychotherapeutic problems. Dr. Kallman, in a very good summary of the rôle of heredity and constitution, is concerned with the psychiatrist's neglect of these factors and pre-occupation with environment as etiology. The remaining papers present problems of failure with electric shock treatment, insulin, lobotomy, neurosyphilis, epilepsy and social case-work. These are worth reading, give criteria for selection of cases, indications for treatment and attempt to outline points for further inquiry.

As a whole, the book would have benefited from more time spent in preparation of the papers and general format. As in many published symposia, the rambling discourse which might have been effectively pointed up when spoken, now sometimes makes difficult reading. References are too frequently sketchy or lacking, and the index is poor. The book also reflects the difficulties that arise in psychiatric discussion out of the lack of clearly formulated definitions and working concepts. There is little agreement on what constitutes therapeutic failure or success, and little uniformity in the construction of aims in psychotherapy.

This is the only book on this subject to date. As a beginning, it is a fairly good volume with an excellent idea. Any medical library should have it, psychiatrists will find it stimulating and rewarding, and the interested practitioner or specialist should read the book as it gives a good survey of what psychiatry as treatment does now.

**History of the Heart and the Circulation.** F. A. Willius, Senior Consultant in Cardiology, Mayo Clinic; and T. J. Dry, Consultant, Section on Cardiology, Mayo Clinic. 456 pp., illust. S. B. Saunders Co., Philadelphia and London; McAinch & Co. Ltd., Toronto, 1948.

The history of medicine is always a fascinating subject. The authors of this book have written a comprehensive, well documented account of advances in the broad field of cardiology from the time of the Egyptians until the end of the first quarter of the present century. The material is presented chronologically in the first section of the book, while the second section is devoted to more complete biographies of the most important contributors to this field.

While the book is undoubtedly most authoritative and complete, it is not as interestingly presented as it could be. The straightforward facts are given without those little items of personal history and details in which the reader of medical history is always interested. In this respect, the second part of the book, devoted to special biographies, is much superior to the first. It is perhaps unfortunate that the entire book is not written in the same manner as the second section, although admittedly it would be difficult to treat such a vast amount of material in much greater detail. Canadian readers will be particularly interested in the fine tributes to Osler and Maude Abbott. For anyone at all interested in the history of medicine and particularly in the physiology of the heart and circulation this is a complete and thorough account.

**Glomerular Nephritis.** T. Addis, M.D., F.R.C.P.(Edin.). 338 pp., illust. \$8.00. Macmillan Co., New York and Toronto, 1948.

The author expresses the opinion that present-day treatment of patients with renal disease is inadequate and sometimes dangerous. He emphasizes the deleterious effects of protein undernutrition and the importance of physiologic rest of the organ which leads to a substantial reduction in the number of functioning nephrons. The volume is based mainly on the wide experience of the author, the bibliography containing only 91 references. Despite these limitations the text covers most of the many problems facing students of the disease in a surprisingly comprehensive manner. There are chapters devoted to laboratory and dietetic methods, the nature and extent of the renal lesion; differentiation from other diseases and finally theory and practice in its treatment. The book contains many tables and some illustrations, including an appendix entitled "Quantitative Dietetics for Patients".

**Handbook of Ophthalmology.** E. L. Goar, Professor of Ophthalmology, Baylor University College of Medicine, Houston, Texas. 166 pp., illust. \$6.00. The C. V. Mosby Co., St. Louis; McAinch & Co. Ltd., Toronto, 1948.

This small book is written for the junior medical student who, with all his various subjects to be studied, has little time to give to ophthalmology. It is well printed, with large type, and has a moderate number of illustrations which to some extent amplify the text.

The material gives the impression that it is a condensation from a larger text. The various pertinent subjects are presented, but in simple form, uncomplicated by any difficulties. Few details are given. It would be impossible for a student to find in this book what strength miotic could be used for glaucoma. He could not discover how to remove a foreign body in the cornea.

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Many similar practical details are omitted, leaving the reader with a comforting birdseye view of the whole subject. The choice of space to each subject is inept. The changes in the eyes due to medical diseases are not given the space they deserve in such a book. Diabetes and the eyes is disposed of in one page, approximately the space allotted to the anatomy of the eyelids. The choice of illustrations is also poor. One should admit that it is the height of foolishness to show a junior medical student a picture of a fundus seen with mercury vapor arc light. The reviewer wonders if the author has ever seen a fundus under such conditions.

The reviewer cannot help but feel this book is an oversimplification. The medical student may be helped to pass his examination, but later when he tries to practice he will find the book of little use.

## BOOKS RECEIVED

**A Doctor Talks to Teen-agers.** W. S. Sadler, Consulting Psychiatrist, Columbus Hospital. 379 pp. \$4.40. The C. V. Mosby Co., St. Louis; McAlpin & Co., Ltd., Toronto, 1948.

**Bailey's Textbook of Histology.** Revised by P. E. Smith, Professor of Anatomy, College of Physicians and Surgeons, Columbia University; and W. M. Copenhaver, Associate Professor of Anatomy, College of Physicians and Surgeons, Columbia University. 781 pp., illust., 12th ed. \$7.00. The Williams & Wilkins Co., Baltimore; The University of Toronto Press, Toronto, 1948.

**British Encyclopædia of Medical Practice** (Medical Progress 1948), and Cumulative Supplement, 1948. Editor-in-Chief, Rt. Hon. Lord Horder, Physician to the King; Consulting Physician to St. Bartholomew's Hospital. Butterworth & Co. (Publishers), Ltd., London, 1948.

**Correlative Neuroanatomy.** J. J. McDonald, J. G. Chusid and J. Lange. 156 pp., illust., 4th ed. \$3.00. University Medical Publishers, Palo Alto, Calif., 1947. Second Printing, 1948.

**Detailed Atlas of the Head and Neck.** R. C. Truex, Associate Professor of Anatomy, College of Physicians and Surgeons, Columbia University; and C. E. Kellner, Artist, Department of Anatomy, College of Physicians and Surgeons, Columbia University. 162 pp., illust. \$15.00. Oxford University Press, New York, 1948.

**Die Primäre Tuberkulose bei Erwachsenen und Kindern und Ihre Entwicklung.** Dr. Med. St. J. Leitner, Privatdozent für innere Medizin der Universität Bern unter Mitarbeit von Dr. R. M. Steinmann. 157 pp., illust. Fr. 15. Medizinischer Verlag Hans Huber, Bern, 1948.

**Disorders of Sex and Reproduction.** A. P. Pillay. 299 pp. \$1.85. H. K. Lewis & Co. Ltd., London, 1948.

**Drug Research and Development.** Edited by A. Smith and A. D. Herrick. 596 pp. \$10.00. Revere Publishing Company, New York, 1948.

**Essentials of Public Health.** W. P. Shepard, Third Vice-president, Health and Welfare Division, Metropolitan Life Insurance Company; C. E. Smith, Professor of Public Health and Preventive Medicine, Stanford University School of Medicine; R. R. Beard, Associate Professor of Public Health and Preventive Medicine, Stanford University School of Medicine; and L. B. Reynolds, Professor of Hydraulic and Sanitary Engineering, Stanford University. 600 pp., illust. J. B. Lippincott Company, Philadelphia, London and Montreal, 1948.

**Foundations of Neuropsychiatry.** Stanley Cobb, Bullock Professor of Neuropathology, Harvard Medical School. 260 pp., illust., 4th ed. \$2.50. The Williams & Wilkins Company, Baltimore, 1948.

**Handbook of Medicine for Final Year Students.** G. F. Walker, Consulting Physician, Peterborough Memorial Hospital. 305 pp., 4th ed. 25/- Sylvio Publications Ltd., London, 1948.

**Handbook of Orthopaedic Surgery.** A. R. Shands, Medical Director of the Alfred I. duPont Institute of the Nemours Foundation, Wilmington, Delaware; and R. R. Raney, Associate in Orthopaedic Surgery, Duke University School of Medicine, Durham, North Carolina. 574 pp., illust., 3rd ed. \$6.00. The C. V. Mosby Co., St. Louis, 1948.

**Handbook of Practical Bacteriology.** T. J. Mackie, Professor of Bacteriology, University of Edinburgh; and J. E. McCartney, Director of Research and Pathological Services, London County Council. 624 pp., illust., 8th ed. \$6.25. E. & S. Livingstone Ltd., Edinburgh; Macmillan Co. of Canada, Toronto, 1948.

**Human Nutrition.** V. H. Mottram, formerly Professor of Physiology at King's College of Household and Social Science, University of London. 278 pp., illust. \$1.65. Edward Arnold & Co., London; Macmillan Co. of Canada, Toronto, 1948.

**Hutchison's Food and the Principles of Dietetics.** Revised by V. H. Mottram, formerly Professor of Physiology at King's College of Household and Social Science, University of London; and G. Graham, Consulting Physician to St. Bartholomew's Hospital. 727 pp., illust., 10th ed. \$5.25. Edward Arnold & Co., London; Macmillan Co. of Canada, Toronto, 1948.

**Ilustraciones Obstetricas.** G. Will, Ex-adjunto del Instituto de Anatomía Patológica de la Universidad de Ginebra; and O. Aguero, Médico-Partero, Adjunto del Servicio No. 2 de la Casa Municipal de Maternidad. illust. Casa Municipal de Maternidad "Concepción Palacios", Caracas, 1946.

**Indice Bibliografico de Lepra.** Vol. III. Q-Z. L. Keffer, Biblioteca do Departamento de Profilaxia de Lepra do Estado de São Paulo, Brasil, 1948.

**Introduction to Diseases of the Chest.** J. Maxwell, Physician, Royal Chest Hospital. 307 pp., illust., 3rd ed. 12/6d. Hodder & Stoughton Ltd., London, 1948.

**Introduction to Medical Mycology.** G. M. Lewis, Member of the American Dermatological Association, Inc.; and M. E. Hopper, Research Fellow in Medicine, Cornell University Medical School. 366 pp., illust., 3rd ed. \$8.50. The Year Book Publishers Inc., Chicago, 1948.

**Introduction to the Principles and Practice of Homoeopathy.** C. E. Wheeler, Consulting Physician to the London Homoeopathic Hospital. 371 pp., 3rd ed. 21s. William Heinemann Medical Books Ltd., London, 1948.

**Les Facteurs Vasculaires et Endocrinians de l'Affection.** A. M. P. Abely, Médecin de l'Hôpital Sainte-Anne; A. Assailly et B. Lainé. 192 pp. 400 fr. L'Expansion Scientifique Française, Editeurs, Paris, 1948.

**Les Varices de la Grossesse.** R. Tournay et P. Wallois. 144 pp., illust. 250 fr. L'Expansion Scientifique Française, Editeurs, Paris, 1948.



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**Manual of Leprosy.** E. Muir, Medical Adviser, British Empire Leprosy Relief Association. 208 pp., illust. \$4.40. E. & S. Livingstone Ltd., Edinburgh; Macmillan Co. of Canada, Toronto, 1948.

**Method of Anatomy.** J. C. B. Grant, Professor of Anatomy in the University of Toronto. 852 pp., illust., 4th ed. \$7.00. The Williams & Wilkins Co., Baltimore; The University of Toronto Press, Toronto, 1948.

**Minor Surgery.** R. J. McN. Love, Surgeon, Royal Northern, Mildmay Mission and Metropolitan Hospitals. 430 pp., illust., 3rd ed. 22s. 6d. H. K. Lewis & Co. Ltd., London, 1948.

**Nursing for the Future.** Esther Lucile Brown, Director, Department of Studies in the Professions, Russell Sage Foundation. 198 pp. \$2.00. Russell Sage Foundation, New York, 1948.

**Polio and its Problems.** R. H. Berg. 174 pp., illust. \$3.75. J. B. Lippincott Co., Philadelphia, London, Montreal, 1948.

**Pregnancy Diagnosis Tests: A Review.** A. T. Cowie, National Institute for Research in Dairying, University of Reading. 283 pp. 15/- . Published by the Commonwealth Bureaux of Animal Breeding, Dairy Science and Animal Health, 1948. Copies may be obtained from the Central Sales Branch, Commonwealth Agricultural Bureaux, Penglais, Aberystwyth, Great Britain.

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**Taking the Cure.** R. G. Lovell, University Hospital, University of Michigan, Ann Arbor, Michigan. 93 pp., illust. \$2.00. Macmillan Co., New York and Toronto, 1948.

**Textbook of Midwifery.** R. W. Johnstone, Professor-Emeritus of Obstetrics and Gynaecology, University of Edinburgh. 570 pp., illust., 13th ed. \$7.50. Adam and Charles Black; Macmillan Co. of Canada, Toronto, 1948.

**The Nature of Disease Institute First Annual Report.** J. E. R. McDonagh. 174 pp., illust. 21s. William Heinemann Medical Books Ltd., London, 1948.

**Therapeutisches Taschenbuch.** G. Ruepp, Brugg. 394 pp. 12 Fr. Medizinischer Verlag Hans Huber, Bern, 1948.

**Therapy Through Interview.** S. G. Law, Psychiatric Institute. 313 pp. \$4.95. McGraw-Hill Book Co., New York, Toronto, London, 1948.

**Transactions of the American Association of Genito-Urinary Surgeons.** Vol. 39. 1947. 262 pp., illust. The Williams & Wilkins Co., Baltimore, 1948.

**Transplantation.** E. Kubanyi, Chefarzt der Chirurgischen Abteilung des St. Rochuskrankenhauses in Budapest. 120 pp., illust. \$12.80. Medizinischer Verlag Hans Huber, Bern, 1948.

**Vitamine und Vitamintherapie.** Prof. Dr. Med. E. Abderhalden, Zürich and Prof. Dr. Med. G. Mouriquand, Lyon. 408 pp., illust. Fr. 28. Medizinischer Verlag Hans Huber, Bern, 1948.

**Voluntary Medical Care Insurance in the United States.** Franz Goldmann. 228 pp. \$3.00. Columbia University Press, New York, 1948.

**Year Book of Pathology and Clinical Pathology 1947.** Edited by H. T. Karsner, Professor of Pathology, Director of the Institute of Pathology, Western Reserve University, Cleveland; H. Z. Lund, Assistant Professor of Pathology, Western Reserve University, Cleveland; and A. H. Sanford, Professor of Clinical Pathology, University of Minnesota (The Mayo Foundation). 558 pp., illust. \$3.75. The Year Book Publishers, Chicago, 1948.

**You and Psychiatry.** W. C. Menninger and M. Leaf. 174 pp. \$3.25. Charles Scribner's Sons, New York; Charles Scribner's Sons, Ltd., London; S. J. Reginald Saunders & Co. Ltd., Toronto, 1948.

**Zinsser's Textbook of Bacteriology.** Revised by D. T. Smith, Professor of Bacteriology and Associate Professor of Medicine, Duke University School of Medicine; et al. 992 pp., illust., 9th ed. \$10.00. Appleton-Century-Crofts, Inc., New York, 1948.

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